The development of management systems in a contracting organization

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THE DEVELOPMENT OF MANAGEMENT SYSTEMS IN A CONTRACTING ORGANIZATION

by

David Thomas Frost

A Master's Thesis

Submitted in partial fulfillment of the requirements for the award of MPhil

Department of Civil Engineering of Loughborough University of Technology

31 July 1992

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This research has established the current 'best practice' and theory in relation to human resource management (HRM) and quality management. This has been achieved through a review of relevant documentation and textbooks, together with discussions with professionals from other organizations.

On completing the initial research, the data was compared with the systems, procedures and documentation in place within a contracting organization employing 120 people and having a sales turnover of approximately £16 million per annum. On the basis of this comparison, the difference between the theoretical data and the Company data was established, and suggestions for improving and modifying the Company's systems were made.

The process of completing this research has enabled the author to identify the key procedures and systems required, within a contracting organization of the size discussed, to effectively operate HRM and quality management systems. The Company had not formally introduced a comprehensive HRM system, and as a result any recommendations made through this research require implementation; however the author introduced a large element of the quality system, and as a result this has been validated through this research programme.
ACKNOWLEDGEMENTS

To my wife, Michele, who has provided the support, help and encouragement which has been so invaluable for completing this work.

To Don and Marie who have provided great help and interest in my endeavours.

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<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACAS</td>
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</tr>
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<td>Additional Voluntary Contribution</td>
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</tr>
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</tr>
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</tr>
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<td>CDR</td>
<td>Controlled Document Register</td>
</tr>
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<td>Construction Industry Training Board</td>
</tr>
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<td>Control of Substances Hazardous to Health</td>
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<td>CRE</td>
<td>Commission for Racial Equality</td>
</tr>
<tr>
<td>CV</td>
<td>Curriculum Vitae</td>
</tr>
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<td>dti</td>
<td>Department of Trade &amp; Industry</td>
</tr>
<tr>
<td>EPCA</td>
<td>Employment Protection Consolidation Act</td>
</tr>
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<td>Equal Opportunities Commission</td>
</tr>
<tr>
<td>GZTS</td>
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</tr>
<tr>
<td>HRM</td>
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</tr>
<tr>
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</tr>
<tr>
<td>ISO</td>
<td>International Standards Organization</td>
</tr>
<tr>
<td>LRQA</td>
<td>Lloyd's Register Quality Assurance</td>
</tr>
<tr>
<td>MMPI</td>
<td>Minnesota Multiphasic Personality Inventory</td>
</tr>
<tr>
<td>NACCB</td>
<td>National Accreditation Council for Certification Bodies</td>
</tr>
<tr>
<td>NAMAS</td>
<td>National Measurement Accreditation Service</td>
</tr>
<tr>
<td>NVQ</td>
<td>National Vocational Qualification</td>
</tr>
<tr>
<td>QA</td>
<td>Quality Assurance</td>
</tr>
<tr>
<td>QC</td>
<td>Quality Control</td>
</tr>
<tr>
<td>SAQ</td>
<td>Subcontractor Assessment Questionnaire</td>
</tr>
<tr>
<td>SCER</td>
<td>Subcontractor Evaluation Report</td>
</tr>
<tr>
<td>SER</td>
<td>Supplier Evaluation Report</td>
</tr>
<tr>
<td>SPC</td>
<td>Statistical Process Control</td>
</tr>
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<td>SQC</td>
<td>Statistical Quality Control</td>
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<td>SSP</td>
<td>Statutory Sick Pay</td>
</tr>
<tr>
<td>TEC</td>
<td>Training Enterprise Council</td>
</tr>
<tr>
<td>TOM</td>
<td>Total Quality Management</td>
</tr>
<tr>
<td>VAQ</td>
<td>Vendor Assessment Questionnaire</td>
</tr>
</tbody>
</table>
## CONTENTS

<table>
<thead>
<tr>
<th>SECTION NO.</th>
<th>HEADING</th>
<th>PAGE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>INTRODUCTION</td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Background</td>
<td>1</td>
</tr>
<tr>
<td>1.2</td>
<td>Aim</td>
<td>2</td>
</tr>
<tr>
<td>1.3</td>
<td>Objectives</td>
<td>3</td>
</tr>
<tr>
<td>1.4</td>
<td>Reasons for Aim</td>
<td>3</td>
</tr>
<tr>
<td>1.5</td>
<td>Work Done</td>
<td>4</td>
</tr>
<tr>
<td>1.6</td>
<td>Overview</td>
<td>4</td>
</tr>
<tr>
<td>1.7</td>
<td>Guide</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>HUMAN RESOURCE MANAGEMENT</td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td>Overview</td>
<td>6</td>
</tr>
<tr>
<td>2.2</td>
<td>Recruitment</td>
<td>7</td>
</tr>
<tr>
<td>2.2.1</td>
<td>Introduction</td>
<td>7</td>
</tr>
<tr>
<td>2.2.2</td>
<td>Job Descriptions</td>
<td>7</td>
</tr>
<tr>
<td>2.2.3</td>
<td>Personnel Specifications</td>
<td>8</td>
</tr>
<tr>
<td>2.2.4</td>
<td>Recruitment Methods</td>
<td>9</td>
</tr>
<tr>
<td>2.2.5</td>
<td>Job Advertisements</td>
<td>11</td>
</tr>
<tr>
<td>2.2.6</td>
<td>Application Forms</td>
<td>11</td>
</tr>
<tr>
<td>2.3</td>
<td>Selection</td>
<td>12</td>
</tr>
<tr>
<td>2.3.1</td>
<td>Planning Selection</td>
<td>12</td>
</tr>
<tr>
<td>2.3.2</td>
<td>Selection Techniques</td>
<td>13</td>
</tr>
<tr>
<td>2.3.3</td>
<td>The Selection Interview</td>
<td>14</td>
</tr>
<tr>
<td>2.3.4</td>
<td>Collating &amp; Using Selection Information</td>
<td>16</td>
</tr>
<tr>
<td>2.3.5</td>
<td>The Offer of Employment</td>
<td>17</td>
</tr>
<tr>
<td>2.3.6</td>
<td>Employment Law &amp; Personnel Selection</td>
<td>18</td>
</tr>
<tr>
<td>2.4</td>
<td>Induction</td>
<td>19</td>
</tr>
<tr>
<td>2.4.1</td>
<td>Induction Programme</td>
<td>19</td>
</tr>
<tr>
<td>2.5</td>
<td>Pay &amp; Benefits Management</td>
<td>21</td>
</tr>
<tr>
<td>2.5.1</td>
<td>Salary Administration</td>
<td>21</td>
</tr>
<tr>
<td>2.5.2</td>
<td>Salary Policies</td>
<td>22</td>
</tr>
<tr>
<td>2.5.3</td>
<td>Wage Administration</td>
<td>23</td>
</tr>
<tr>
<td>2.5.4</td>
<td>Job Evaluation</td>
<td>24</td>
</tr>
<tr>
<td>2.5.5</td>
<td>Pay Structures</td>
<td>28</td>
</tr>
<tr>
<td>2.5.6</td>
<td>Employee Benefits</td>
<td>30</td>
</tr>
<tr>
<td>2.6</td>
<td>Performance Evaluation</td>
<td>32</td>
</tr>
<tr>
<td>2.6.1</td>
<td>Purposes and Objectives</td>
<td>32</td>
</tr>
<tr>
<td>2.6.2</td>
<td>Performance Appraisal</td>
<td>33</td>
</tr>
<tr>
<td>2.7</td>
<td>Training &amp; Development</td>
<td>37</td>
</tr>
<tr>
<td>2.7.1</td>
<td>The Need for Training</td>
<td>37</td>
</tr>
<tr>
<td>2.7.2</td>
<td>The Approach to Training</td>
<td>38</td>
</tr>
<tr>
<td>2.7.3</td>
<td>Training Policy</td>
<td>40</td>
</tr>
<tr>
<td>2.7.4</td>
<td>Training Objectives</td>
<td>40</td>
</tr>
<tr>
<td>2.7.5</td>
<td>Analysis of Training Needs</td>
<td>42</td>
</tr>
<tr>
<td>2.7.6</td>
<td>Designing a Training Programme</td>
<td>43</td>
</tr>
</tbody>
</table>
## CONTENTS

<table>
<thead>
<tr>
<th>SECTION NO.</th>
<th>HEADING</th>
<th>PAGE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.8</td>
<td>Employment Law</td>
<td>48</td>
</tr>
<tr>
<td>2.8.1</td>
<td>Sources of Employment Law</td>
<td>48</td>
</tr>
<tr>
<td>2.8.2</td>
<td>The Contract of Employment</td>
<td>49</td>
</tr>
<tr>
<td>2.8.3</td>
<td>Key Employment Legislation</td>
<td>52</td>
</tr>
<tr>
<td>2.8.4</td>
<td>Termination of the Contract of Employment</td>
<td>54</td>
</tr>
<tr>
<td>2.9</td>
<td>The Collection &amp; Use of Personnel Information</td>
<td>56</td>
</tr>
<tr>
<td>2.9.1</td>
<td>Introduction</td>
<td>56</td>
</tr>
<tr>
<td>2.9.2</td>
<td>Personnel Records</td>
<td>57</td>
</tr>
<tr>
<td>2.9.3</td>
<td>Personnel Statistics</td>
<td>58</td>
</tr>
<tr>
<td>2.10</td>
<td>Chapter Summary</td>
<td>61</td>
</tr>
<tr>
<td>3.1</td>
<td>QUALITY MANAGEMENT</td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td>The Development of Quality Management</td>
<td></td>
</tr>
<tr>
<td>3.3</td>
<td>Quality Management Systems</td>
<td>65</td>
</tr>
<tr>
<td>3.3.1</td>
<td>Quality Control</td>
<td>65</td>
</tr>
<tr>
<td>3.3.2</td>
<td>Quality Assurance</td>
<td>65</td>
</tr>
<tr>
<td>3.3.3</td>
<td>Total Quality Management</td>
<td>66</td>
</tr>
<tr>
<td>3.3.4</td>
<td>British Standard 5750</td>
<td>68</td>
</tr>
<tr>
<td>3.4</td>
<td>Management Responsibility</td>
<td>71</td>
</tr>
<tr>
<td>3.4.1</td>
<td>Organization</td>
<td>71</td>
</tr>
<tr>
<td>3.4.2</td>
<td>Structure</td>
<td>72</td>
</tr>
<tr>
<td>3.4.3</td>
<td>Training</td>
<td>74</td>
</tr>
<tr>
<td>3.4.4</td>
<td>Auditing</td>
<td>75</td>
</tr>
<tr>
<td>3.5</td>
<td>Documentation</td>
<td>78</td>
</tr>
<tr>
<td>3.5.1</td>
<td>Introduction</td>
<td>78</td>
</tr>
<tr>
<td>3.5.2</td>
<td>Quality Policy</td>
<td>79</td>
</tr>
<tr>
<td>3.5.3</td>
<td>Quality Manual</td>
<td>81</td>
</tr>
<tr>
<td>3.5.4</td>
<td>Procedures Manual</td>
<td>82</td>
</tr>
<tr>
<td>3.5.5</td>
<td>Quality Plans</td>
<td>85</td>
</tr>
<tr>
<td>3.6</td>
<td>Procurement</td>
<td>88</td>
</tr>
<tr>
<td>3.6.1</td>
<td>Control</td>
<td>88</td>
</tr>
<tr>
<td>3.6.2</td>
<td>Supplier &amp; Subcontract Assessment</td>
<td>90</td>
</tr>
<tr>
<td>3.6.3</td>
<td>Supplier &amp; Subcontract Evaluation</td>
<td>92</td>
</tr>
<tr>
<td>3.6.4</td>
<td>Defining Requirements</td>
<td>93</td>
</tr>
</tbody>
</table>
## CONTENTS

<table>
<thead>
<tr>
<th>SECTION NO.</th>
<th>HEADING</th>
<th>PAGE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.7</td>
<td>Third Party Certification</td>
<td>97</td>
</tr>
<tr>
<td>3.7.1</td>
<td>Introduction</td>
<td>97</td>
</tr>
<tr>
<td>3.7.2</td>
<td>British Standards Institute</td>
<td>98</td>
</tr>
<tr>
<td>3.7.3</td>
<td>Lloyd's Register Quality Assurance</td>
<td>100</td>
</tr>
<tr>
<td>3.7.4</td>
<td>SGS Yarsley Quality Assured Firms</td>
<td>101</td>
</tr>
<tr>
<td>3.7.5</td>
<td>Other Certification Bodies</td>
<td>101</td>
</tr>
<tr>
<td>3.7.6</td>
<td>Costs of Certification</td>
<td>102</td>
</tr>
<tr>
<td>3.8</td>
<td>Quality Costing</td>
<td>103</td>
</tr>
<tr>
<td>3.8.1</td>
<td>Introduction</td>
<td>103</td>
</tr>
<tr>
<td>3.8.2</td>
<td>Prevention Costs</td>
<td>104</td>
</tr>
<tr>
<td>3.8.3</td>
<td>Appraisal Costs</td>
<td>104</td>
</tr>
<tr>
<td>3.8.4</td>
<td>Failure Costs</td>
<td>105</td>
</tr>
<tr>
<td>3.8.5</td>
<td>External Quality Assurance Costs</td>
<td>105</td>
</tr>
<tr>
<td>3.9</td>
<td>Chapter Summary</td>
<td>107</td>
</tr>
</tbody>
</table>

4. THE DEVELOPMENT OF HUMAN RESOURCE MANAGEMENT IN A CONTRACTING ORGANIZATION

| 4.1         | Introduction                          | 108      |
| 4.2         | Recruitment                           | 109      |
| 4.2.1       | Job Descriptions                      | 109      |
| 4.2.2       | Personnel Specifications              | 111      |
| 4.2.3       | Recruitment Methods                   | 113      |
| 4.2.4       | Job Advertisements                    | 115      |
| 4.2.5       | Application Forms                     | 117      |
| 4.3         | Selection                             | 118      |
| 4.3.1       | Planning Selection                    | 118      |
| 4.3.2       | Selection Techniques                  | 121      |
| 4.3.3       | The Offer of Employment                | 123      |
| 4.4         | Induction                             | 125      |
| 4.4.1       | Induction Policy                      | 125      |
| 4.4.2       | Induction Programme                   | 125      |
| 4.5         | Pay & Benefits Management             | 128      |
| 4.5.1       | Salary Administration & Policy        | 128      |
| 4.5.2       | Wage Administration                   | 129      |
| 4.5.3       | Job Evaluation                        | 131      |
| 4.5.4       | Pay Structure                         | 133      |
| 4.5.5       | Profit Share Scheme                   | 136      |
| 4.5.6       | Employee Benefits                     | 138      |
| 4.6         | Performance Evaluation                | 141      |
| 4.7         | Training and Development              | 142      |
| 4.7.1       | Training Policy                       | 142      |
| 4.7.2       | Training Procedures                   | 143      |
| 4.7.3       | Setting Up Company Training Courses   | 146      |
## CONTENTS

<table>
<thead>
<tr>
<th>SECTION NO.</th>
<th>HEADING</th>
<th>PAGE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.8</td>
<td>Employment Law</td>
<td>148</td>
</tr>
<tr>
<td>4.8.1</td>
<td>The Staff Handbook</td>
<td>148</td>
</tr>
<tr>
<td>4.8.2</td>
<td>The Contract of Employment</td>
<td>152</td>
</tr>
<tr>
<td>4.9</td>
<td>The Collection &amp; Use of Personnel Information</td>
<td>154</td>
</tr>
<tr>
<td>4.9.1</td>
<td>Introduction</td>
<td>154</td>
</tr>
<tr>
<td>4.9.2</td>
<td>Staff Database</td>
<td>154</td>
</tr>
<tr>
<td>4.9.3</td>
<td>Personnel Records</td>
<td>155</td>
</tr>
<tr>
<td>4.10</td>
<td>Chapter Summary</td>
<td>161</td>
</tr>
</tbody>
</table>

## 5. THE DEVELOPMENT OF QUALITY MANAGEMENT IN A CONTRACTING ORGANIZATION

| 5.1         | Introduction                                      | 163      |
| 5.2         | Management Responsibility                         | 164      |
| 5.2.1       | Organization                                      | 164      |
| 5.2.2       | Structure                                          | 165      |
| 5.2.3       | Training                                           | 166      |
| 5.2.4       | Auditing                                           | 168      |
| 5.3         | Documentation                                     | 172      |
| 5.3.1       | Quality Policy                                    | 172      |
| 5.3.2       | Quality Manual                                    | 174      |
| 5.3.3       | Procedures Manual                                 | 175      |
| 5.3.4       | Quality Plans                                     | 180      |
| 5.3.5       | Controlled Document Register                      | 186      |
| 5.4         | Procurement                                        | 187      |
| 5.4.1       | Control                                           | 187      |
| 5.4.2       | Supplier & Subcontractor Assessment                | 187      |
| 5.4.3       | Supplier & Subcontractor Evaluation                | 189      |
| 5.4.4       | Defining Requirements                              | 193      |
| 5.5         | Third Party Certification                         | 195      |
| 5.5.1       | Certification Bodies                              | 195      |
| 5.5.2       | Certification Programme & Costs                   | 196      |
| 5.6         | Quality Costing                                   | 199      |
| 5.6.1       | Introduction                                      | 199      |
| 5.6.2       | Prevention Costs                                  | 199      |
| 5.6.3       | Appraisal Costs                                   | 201      |
| 5.6.4       | Failure Costs                                      | 202      |
| 5.6.5       | External Quality Assurance Costs                  | 203      |
| 5.6.6       | Total Quality Costs Estimated from this Study      | 203      |

<p>| 5.7         | Chapter Summary                                   | 205      |</p>
<table>
<thead>
<tr>
<th>SECTION NO.</th>
<th>HEADING</th>
<th>PAGE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>CONCLUSIONS</td>
<td></td>
</tr>
<tr>
<td>6.1</td>
<td>Overview</td>
<td>208</td>
</tr>
<tr>
<td>6.2</td>
<td>Human Resource Management</td>
<td></td>
</tr>
<tr>
<td>6.2.1</td>
<td>Recruitment &amp; Selection</td>
<td>209</td>
</tr>
<tr>
<td>6.2.2</td>
<td>Induction</td>
<td>210</td>
</tr>
<tr>
<td>6.2.3</td>
<td>Pay &amp; Benefits Management</td>
<td>210</td>
</tr>
<tr>
<td>6.2.4</td>
<td>Performance Evaluation</td>
<td>211</td>
</tr>
<tr>
<td>6.2.5</td>
<td>Training &amp; Development</td>
<td>211</td>
</tr>
<tr>
<td>6.2.6</td>
<td>Employment Law</td>
<td>211</td>
</tr>
<tr>
<td>6.2.7</td>
<td>The Collection &amp; Use of Personnel Information</td>
<td>212</td>
</tr>
<tr>
<td>6.2.8</td>
<td>Summary</td>
<td>212</td>
</tr>
<tr>
<td>6.3</td>
<td>Quality Management</td>
<td></td>
</tr>
<tr>
<td>6.3.1</td>
<td>Management Responsibility</td>
<td>214</td>
</tr>
<tr>
<td>6.3.2</td>
<td>Documentation</td>
<td>214</td>
</tr>
<tr>
<td>6.3.3</td>
<td>Procurement</td>
<td>215</td>
</tr>
<tr>
<td>6.3.4</td>
<td>Third Party Certification</td>
<td>215</td>
</tr>
<tr>
<td>6.3.5</td>
<td>Quality Costing</td>
<td>216</td>
</tr>
<tr>
<td>6.3.6</td>
<td>Summary</td>
<td>216</td>
</tr>
<tr>
<td>6.4</td>
<td>Recommendations for Further Study</td>
<td>218</td>
</tr>
</tbody>
</table>

References

Bibliography
THE DEVELOPMENT OF MANAGEMENT SYSTEMS IN A CONTRACTING ORGANIZATION

1. INTRODUCTION

1.1 BACKGROUND

This research is centred on human resource management (HRM) and quality management within contracting organizations.

All companies must operate some form of accounting management system in order to ensure compliance with the requirements of Her Majesty's Inspector of Taxes and general Company Law. There is a substantial incentive to companies for this system to be in place, because directors have a personal legal responsibility to ensure that Company Law is upheld.

The same incentive as discussed in the previous paragraph does not apply to the management systems studied through this research. Formal HRM systems are not found in all companies, and personnel professionals are only commonly employed in organizations employing a significant number of staff. Quality management is similarly not applied to all organizations, and has only been commonly applied within the construction sector over the last ten years; however it is becoming an increasingly important subject as the requirement for the evidence of the operation of a recognised quality system grows in many market places.

In the last twenty years construction companies of all sizes have made considerable efforts at increasing their productivity and general efficiency. This effort has been aimed at the technical aspects of company management. The control of material waste was widely tackled in the 1970's, Project Managers have been introduced into companies, systems have been computerised and a number of other improved management systems were introduced; however these changes were all aimed at the production side of the companies.

The industry has traditionally seen the way to improve its service to its clients as being directly through the projects it constructs. Other industries have taken a wider view, and some would say a more enlightened approach, by looking at other ways of improving efficiency. This has included improving company conditions and staff morale through better HRM, and improving the client's image of the product itself through quality assurance schemes.
As a result of this background, this research is directed at addressing two areas of management which are not widely understood in many contracting organizations. The aim of the research is therefore to generate management system models which increase the understanding of the development of HRM and quality management within a medium sized contracting organization.

From May 1990 the author was employed as a Teaching Company Associate by the Civil Engineering Department at Loughborough University to work on a research project involved with the introduction of a quality management system within a construction company in Northampton. The Company, which employed 120 people and generated a turnover of £16 million, had already spent two years carrying out some preliminary work into the current position regarding quality management within the construction industry generally, and determining the requirements of BS 5750 Part Two for the construction industry.

After familiarizing himself with the preliminary work already done the author spent the next two years developing and implementing a complete quality management system to a point where it was fully operational within the Company, and at a stage where the system was ready for third party certification. Once the author had commenced this work it soon became clear to him that for the implementation of a quality management system to be a success a change of culture had to be brought about amongst the Company employees. This led the author to realise that a complimentary study of HRM could be of great benefit, and so the idea of an extended piece of research leading to a higher degree was conceived and commenced. The author used his personal work on quality management within the Company as a basis for his work, and this was supplemented by additional research into quality systems and extended by his own work into HRM. The Company expressed an interest into the author's own work in this latter area, and indeed encouraged the development of an HRM system, with the Managing Director assisting with the 'fine tuning' of the documented system to a stage where it could be implemented within the Company at some time in the future.

1.2 AIM

The aim of this research is to evaluate the human resource and quality management systems of a contracting organization, in order to arrive at best practice models for each system.
1.3 OBJECTIVES

In order to satisfy the aim, the objectives of this research are to achieve the following:

(i) To study the best practice and theory of HRM through current textbooks, articles, journals and other relevant sources of information. This area will also be achieved through discussions with personnel professionals within other organizations.

(ii) To study the best practice and theory of quality management through the same methods as described for point (i).

(iii) To compare the results of the study described in point (i) with the current HRM practice operating within the organization under evaluation. The organization's HRM system will be studied through structured interviews with employees and by analysing all documentation and procedures relating to this area of management.

(iv) To compare the results of the study described in point (ii) with the current quality management system operating within the organization. The quality management system will be studied through the same processes used for point (iii).

(v) To discuss the results of the comparisons made, as discussed in points (iii) and (iv), and to suggest best practice models for both an HRM system and a quality system based on this structured analysis.

(vi) To validate the operation of the quality system within a suitable company.

1.4 REASONS FOR THE AIM

Through the introduction of a quality management system the author identified that for the introduction to be a success the attitude of the employees and the culture of the organization has to be conducive to adapting to change. Employee attitudes and organizational culture are largely dependent upon the HRM systems and policies of the company, and as a consequence there is a clear link between the organizational needs for operating both quality and HRM systems. Textbooks relating to both subjects provide general overviews only, and therefore there was a clear need to carry out research for this subject.
1.5 WORK DONE

The research carried out has involved the following activities:-

(i) Referencing from ninety-nine sources, including the following:-

- Textbooks.
- Journals.
- Papers.
- Industry Body Guidance Notes and Documents.
- Personnel professionals.
- Quality management professionals.
- Certification body brochures and correspondence.
- British Standards.
- Company documentation.

(ii) Structured interviews with Company staff.

(iii) Structured interviews with personnel practitioners from other organizations.

(iv) Background information from thirty-two sources listed in the Bibliography.

(v) Following the research activities described in points (i) to (iv), the data was analysed and compared.

(vi) Based on the analysis of the data, recommendations were generated for improving and modifying the management systems and procedures discussed.

(vii) Quality management systems were introduced.

(viii) Feedback was obtained from the operation of the quality management system, amendments were made, and the system was left in full operation.

1.6 OVERVIEW

This research has generated the data to provide the guidance on the key procedures required for operating both an HRM system and a quality system within a contracting organization of the size studied.

The work has provided an illustration on how management systems can be reviewed, and on the basis of the review, how revised and new systems can be defined and established within the organization. The initial phase required the analysis of best practice which can then be compared with actual practice in the organization. This methodology provides an objective basis on which to review systems and procedures, since any changes are based on a factual study.
As part of this research the author was responsible for implementing a large element of the quality system through the development of procedures in liaison with the staff of the company already described.

The system was operated through the production of Quality Plans, supplier and subcontractor evaluation, and internal auditing. The operation of the quality system provided a basis for its validation through this research.

This research also enabled the author to propose a comprehensive HRM system, based on the needs of the organization, to the directors of the Company. The proposals made to the directors were accepted as workable and necessary for implementation.

1.7 GUIDE

This thesis contains six chapters, which are as follows:

(i) Chapter One. This is the introductory chapter which covers the background to the research, the aims and objectives, and an overview of the work done and ideas generated.

(ii) Chapter Two. This discusses the current theoretical and best practice in HRM, as suggested by research into current textbooks and methods discussed in section 1.5 parts (i) to (iv).

(iii) Chapter Three. This discusses the current theoretical and best practice in quality management based on the methods used for Chapter Two.

(iv) Chapter Four. This compares the data generated in Chapter Two with the current state of the Company's HRM system, and comments on the differences between the current and best practice. Recommendations for changes to the Company's current HRM system are also included in this chapter.

(v) Chapter Five. This compares the data generated in Chapter Three with the current state of the Company's quality system, and comments on the differences between current and best practice. A description of the proposed and implemented quality system is also contained in this chapter.

(vi) Chapter Six. This is the conclusion chapter which includes the conclusions drawn from the data generated from the studies discussed in Chapters four and five. Finally, this chapter contains recommendations for further study.
2. HUMAN RESOURCE MANAGEMENT

2.1 OVERVIEW

Human resource management (HRM) covers all the activities required to be carried out by an organization to deal with its employees. These key activities are as follows:

(i) Recruitment.
(ii) Selection.
(iii) Induction.
(iv) Pay and benefits management.
(v) Performance evaluation.
(vi) Training and development.
(vii) Employment law.
(viii) The collection and use of personnel information.

The activities listed above interrelate closely, and essentially form an 'employment cycle', referred to in section 2.10, since the process of recruitment leads to selection, which leads to inducting a new employee. The pay and benefits of each employee must be managed and coordinated, and there may be a formal staff performance evaluation system linked to the identification of training and development needs. The HRM system should satisfy the relevant employment legislation, and all key personnel data must be recorded, controlled and monitored.

This chapter deals with each of the areas defined in detail, which will then be compared with the Company's HRM system in Chapter four.
2.2 RECRUITMENT

2.2.1 Introduction

Recruiting is the personnel/human resource management activity that results in a pool of job candidates (1).

Recruitment involves the process of attracting individuals to apply to join an organization. Clearly this process can take a variety of forms, and will depend upon the nature of the industry involved, the position or positions available and the type of individual or individuals required.

Hackett suggests that initially an organization has to ensure that the vacancy will continue to feature in the organization's human resource plan, and that a new appointment is genuinely required (2). It may be necessary for the relevant line manager to complete a personnel requisition form approved by their own manager, and this will assist in evaluating the work of the department as a whole. A senior member of the personnel department may be responsible for approving recruitment, and then more junior members may become involved with the general administration.

Essentially there are three factors in the planning phase of the recruitment process. These are as follows:

i. Analyse the job.
ii. Prepare a job description.
iii. Prepare a personnel specification.

Job analysis covers the tasks and duties of the job. Areas such as job title, an appropriate organization chart, a definition of the job and a list of the main tasks of the job should be included (3). This information can be obtained by talking with the current job holder or their superior.

2.2.2 Job Descriptions

The job description defines the key information about a position, and should provide the job title, the basic organization, the overall responsibility of the individual and the main activities of the post (3).

A carefully compiled job description provides much of the information that will be needed in deciding where and who to recruit (2). Personnel departments often maintain a library of job descriptions based on a standard format.
The Advisory, Conciliation and Arbitration Service (ACAS) suggest that a good job description can be drawn up if the following points are remembered (7):

(i) Main purpose of the job – try to describe this in one sentence; if you cannot find a main purpose, perhaps the whole job needs reviewing.

(ii) Main tasks of the job – always use active verbs, like 'writing', 'filing', 'milling', 'repairing', to describe precisely what is done, rather than vague terms such as 'in charge of', 'deals with'.

(iii) Scope of the job – although the 'main tasks' describe what is done, they don't necessarily indicate the scope or importance of the job. This can be done by describing the value of materials or equipment handled, the degree of precision required, and the number of people supervised etc.

2.2.3 Personnel Specifications

The personnel specification is a description of what someone will need to bring with them by way of abilities and motivation if they are to do the job successfully (2). The personnel specification should contain six elements of information as follows:-

(i) The knowledge, skills and personal attributes needed to do the job.
(ii) The qualifications, experience and training needed to provide knowledge and skills required.
(iii) Age limits where appropriate.
(iv) Prospects of promotion.
(v) Special features of the job (eg. unsocial hours, travelling etc.).
(vi) Terms and conditions of employment.

Two well established classifications exist to help the process of developing a personnel specification; Rodger's Seven-point Plan and Munroe Fraser's Five-fold Grading System as shown below (7).

The Seven-point Plan (8)

1. Physical make-up: health, appearance, bearing and speech.
4. Special aptitudes: mechanical, manual dexterity, facility in use of words and figures.
5. Interests: intellectual, practical, constructional, physically active, social, artistic.
7. Circumstances: any special demands of the job, such as ability to work unsocial hours, travel abroad etc.
The Five-fold Grading System (9)

1. Impact on others: physical make-up, appearance, speech and manner.
2. Acquired qualifications: education, vocational training, work experience.
4. Motivation: individual goals, consistency and determination in following them up, success rate.
5. Adjustment: emotional stability, ability to stand up to stress and ability to get on with people.

2.2.4 Recruitment Methods

Hackett argues that in many organizations, top management take the view that it is better to promote from within wherever possible (2).

Where internal recruitment is concerned the use of noticeboards or in-house publications may be used as the advertising media, or as an alternative a list of possible candidates for the vacancy can be compiled based upon employee records. In an effort to ensure that all staff gain an equal opportunity in applying for the vacancy the first of the methods discussed will ensure that the vacancy is open to all employees, since personnel records may not always be a totally foolproof source of information in this context.

Inevitably it will not always be possible to recruit internally and therefore a method of external recruitment will be used. The options for consideration will be advertising via media such as trade magazines, national or local newspapers, recruitment agencies, leaflets, networking, Job Centres, local radio or television, staff referral, head hunting and recruitment fairs.

Trade magazines will be used for specific skills or professions and therefore have a narrow target readership. National newspapers (eg. The Guardian or The Daily Telegraph) typically advertise jobs at a professional and managerial level, however the costs of advertising can be considerable.
The percentage of jobs advertised in quality newspapers during December 1991 was as follows (5):

<table>
<thead>
<tr>
<th>Newspaper</th>
<th>% Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guardian</td>
<td>38.3</td>
</tr>
<tr>
<td>Daily Telegraph</td>
<td>15.2</td>
</tr>
<tr>
<td>Times</td>
<td>13.1</td>
</tr>
<tr>
<td>Financial Times</td>
<td>6.6</td>
</tr>
<tr>
<td>Independent</td>
<td>6.3</td>
</tr>
<tr>
<td>Sunday Times</td>
<td>16.2</td>
</tr>
<tr>
<td>Observer</td>
<td>2.5</td>
</tr>
<tr>
<td>Independent on Sunday</td>
<td>1.4</td>
</tr>
<tr>
<td>Sunday Telegraph</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td><strong>80.0</strong></td>
</tr>
<tr>
<td><strong>Dailies</strong></td>
<td><strong>20.0</strong></td>
</tr>
</tbody>
</table>

Local newspapers typically advertise jobs of a more general nature and are aimed at a readership in a defined geographical region. Recruitment agencies can either specialise in specific industries or professions, or alternatively will work in all sectors at all levels. Leaflets can be used to advertise vacant posts and are distributed by the company to attract applicants living within the vicinity. Networking (word of mouth) is an uncontrolled method of recruitment and involves current employees informing acquaintances of vacancies. Job Centres will advertise positions on notice boards within the centres, at no cost to an employer. The use of advertising media such as local radio or television is not common and could potentially incur substantial cost to the employer. Staff referral is an excellent means of recruitment where cost is of prime consideration and this method can be a means of attracting suitable people into an organization. Head hunting is an expensive method of recruitment and tends to be used when more senior or specialised posts need to be filled.

Recruitment fairs are generally used to attract applicants of graduate calibre and these are normally programmed to take place before the annual graduation periods, with companies such as Arthur Anderson, Boots, BP, British Steel, Courtaulds, Ford, ICI, Lucas, NatWest, Proctor and Gamble, Pilkington and Unilever having an unwavering commitment to graduate recruitment (4).
2.2.5 Job Advertisements

Tyson and York suggest that job advertisements need to cover information derived from the job description and personnel specifications in six broad areas as follows (6):

(i) The work organization: its main occupation and location.
(ii) The job: its title; main duties (location, if varying from the main centre).
(iii) Qualifications, and experience (both necessary and desirable): personal requirements; specifically professional qualifications, experience, aptitudes, etc.
(iv) The rewards and opportunities: basic salary and other emoluments; any other benefits; opportunities for personal development.
(v) Conditions: any special factors and circumstances affecting the job.
(vi) Applications: form of application; closing date; address for forwarding.

2.2.6 Application Forms

The two main methods of obtaining an applicant's details are via a standard application form or the applicant's curriculum vitae (CV). The design of an appropriate application form clearly depends upon the needs of the organization, however Tyson and York point out that the following items will generally be needed in most cases (6):

(i) Job title.
(ii) Applicant's full names.
(iii) Date of birth.
(iv) Nationality.
(v) Marital circumstances.
(vi) Family circumstances (eg. children and ages).
(vii) Education (full time, part time training courses).
(viii) Academic qualifications.
(ix) Professional qualifications.
(x) Present employment.
(xi) Previous employment in chronological order.
(xii) Main current interests, pursuits and achievements outside work.
(xiii) Health (including any serious illness or disability, past or present).
(xiv) Court convictions (convictions other than for minor offences, eg. car parking etc.).
(xv) Additional information (any information not covered in the form which the applicant considers significant to the application).
(xvi) Referees.
(xvii) Source of information about the vacancy.
2.3 SELECTION

2.3.1 Planning Selection

The next phase in the recruitment process will be to establish a short list of candidates for selection. This will be done by comparing the application form or curriculum vitae with the personnel specification. Graham and Bennett suggest that the recruiter should look for attributes which show the candidate to be apparently suitable for the job and shortcomings which may either rule out the candidate from consideration or necessitate special training if he were engaged (28). All candidates, whether successful or unsuccessful should be informed of the outcome in writing.

Once a short list has been compiled and approved where necessary by the line manager concerned, it is necessary to plan the exercise in which selection of a candidate will be carried out. This usually requires attention to (10):

(i) Who will be engaged in the task.

(ii) What methods will be employed to inform their judgement in making the choice.

(iii) When the applicants are to be informed of the choice (at the interview or later), by whom (line manager or personnel specialist), and through what medium (for example, orally or by letter).

The task of selection falls to a combination of line management and personnel specialists ranging from a one manager interview (perhaps with personnel specialists conducting screening tests) to an interview panel of a number of staff of varying functions. Problems can arise with selection where interviewers are not trained or are inexperienced; indeed Plumbley comments that most people think that they are good interviewers, and are reluctant to learn the methods necessary to give valid and reliable results and to avoid biases and prejudices (11).

The options in the selection process are normally associated with how many interviews will take place and whether or not to introduce some form of testing. The interviewer will usually have information on the applicant on an application form or letter, and this may require more detailed follow up via a personal interview. The main purpose of a test will be to derive a more precise or accurate analysis of the candidate's intelligence, personality, abilities or aptitudes, and these are discussed further in section 2.3.2.
2.3.2 Selection Techniques

The type of job to be filled will dictate the nature of the selection process. For many jobs a single interview may be quite satisfactory, however for more responsible positions a more detailed selection process may be required. The main options are detailed below:

(i) Selection tests. Such tests are related to the work skills required to do the job and will need to determine levels of attainment and performance. For example a simple assembly test may be used when selecting production operatives, and clearly it is important that the test tries skills that will be used in the job and does not discriminate unfairly.

(ii) Group selection. This can involve leadership groups, group problem-solving and command exercises. Such tests help to assess the candidates' ability to get on with people and to influence them. They have been used in management selection where the interview alone is considered to be insufficient. This process of selection can take up a considerable amount of time and can also incur substantial cost and consequently its use has to be selective.

(iii) Psychological tests. These are tests of general intelligence, motivation, attitudes, aptitudes and personality. Interviewers or testers require specific training before using these tests. They are particularly effective with young people who have been in employment for a short time, and consequently their capabilities may be difficult to judge on their past performance.

(iv) References. These are normally required to substantiate the information obtained on the candidate earlier on in the selection process, and they should only be taken up with the candidates' permission. It is important that references should only be used to confirm a decision that has already been made and it must be taken into account that a good reference may be written to remove someone from an organization.

(v) Assessment centres. These are increasingly used by larger companies where short-listed candidates are subjected to a range of selection tests. This method generates a greater variety of information about the candidates, however it can be costly and is therefore only used where strictly necessary.
Byham defines an assessment centre as (12):

'A formal system of evaluating individuals (for recruitment or promotion to managerial, supervisory, or sales positions) using multiple evaluation techniques, including various types of job-related simulations and, sometimes, interviews and psychological tests. Common job simulations include "in-tray" exercises, group discussions, simulated interviews with subordinates or clients and exercises in fact-finding, oral presentation, and written communication.'

Several hundred different personality tests are in existence, with the majority of them based on a definition of personality which emphasises the emotional, motivational, attitudinal and interpersonal aspects. The 'Guilford-Zimmerman Temperament Survey' (GZTS) classifies personality traits of individuals based on ten different traits (e.g. sociability, objectivity and thoughtfulness). The 'Minnesota Multiphasic Personality Inventory (MMPI) can be used to identify, in advance, possible human malfunctions based on such areas as health, education and social attitudes. Cattell's '16 PF' test invites subjects to record their personalities on sixteen separate dimensions (primary traits), and on the basis of the results any abnormalities can be uncovered in the personality.

Other tests such as handwriting analysis (graphology) or practical leadership exercises using an obstacle course scenario (used in military selection procedures), are further examples of selection methods.

2.3.3 The Selection Interview

Interviewing is the most common form of selection, however there is much evidence to suggest that it is used far less effectively than might be the case.

In an investigation Scott arranged for six interviewers each to interview 36 applicants for sales positions (13). Interviewers subsequently placed the interviewees in rank order from most to least suitable. For 28 applicants interviewers could not agree whether they belonged in the top or bottom half of the distribution.

Some critics of selection interviewing overlook the other purposes which interviews satisfy. A selection interview should be a two-way exercise and should permit the applicant to satisfy himself or herself about the work and conditions. Few organizations would wish to offer employment to persons they have not had a chance to look at, and few applicants would wish to take up employment without a visit to the place of employment and the opportunity to ask questions (14).
A good interviewer will control an interview without doing all the talking. He will use a variety of skills to draw out the information needed. The main ‘tools’ for achieving a successful interview are questions, statements, listening and observing. A good interviewer will alternate questions of different types. Most interviewers need to discover both facts and feelings – a combination of open and specific questions – although the balance may alter (15).

The following types of question should be used in the selection interview where appropriate:-

<table>
<thead>
<tr>
<th>Type of Question</th>
<th>Example</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPEN</td>
<td>How did you feel about the takeover in the New Year?</td>
<td>To get the interviewee talking about ideas and feelings as well as facts.</td>
</tr>
<tr>
<td>CLOSED</td>
<td>I understand from what you say that you don’t like the squash club, am I right?</td>
<td>To summarize. To bring back to the subject at hand if the conversation has wandered. To check if you have understood</td>
</tr>
<tr>
<td>SPECIFIC</td>
<td>On what date did you join the organization?</td>
<td>To find out the facts. A good directive approach. Good for the talkative interviewee.</td>
</tr>
<tr>
<td>REFLECTING</td>
<td>You say you are not happy with the squash club?</td>
<td>Reverses a statement of question by rephrasing and sending it back to the interviewee. Keeps the interviewee talking. Avoids personal involvement or bias showing. Encourages interviewee to expand the subject further.</td>
</tr>
</tbody>
</table>
LEADING

I think it's disgraceful that the club is closed don't you?

The answer is given in the question. Dangerous if used inadvertently. Good for testing reaction or relaxing a nervous person initially.

HYPOTHETICAL

If the squash club were to close, what would you do?

Good for selection or testing possible reaction to certain situations.

It is necessary for the interviewer to have the facts to be able to feed information into the interview in order to clarify any misunderstandings, and to give information where it is needed to give understanding. It is also important to summarise the interview as it is ongoing (ie. interim) and when the interview has finished (ie. final). An interim summary enables the interviewer to keep control of the interview and also to point out clearly how it has progressed. A final summary gives a positive finish, makes the final position clear, sums up what has been achieved during the interview and makes sure the interviewee is clear about future action that was decided.

The interviewer must concentrate throughout the interview and analyse what is said and not said and its significance. It will also be necessary to pick up points for later expansion, to note discrepancies and to listen for generalisation that will need to be questioned more specifically. Also the interviewer must be seen to be listening as this establishes a rapport with the interviewee. Eye contact is very important here; under 30% and there will not be enough contact, but over 60% becomes uncomfortable (15).

2.3.4 Collating and Using Selection Information

The selection process generates both data and information, and these need to be put together in a logical fashion to provide a basis for informed choice. This is a skilled process, involving the assemblage of the information in a way which displays both the indications and contra-indications of what has been gleaned from these various sources (10).
Plumbley suggests adopting a system of recording the information gleaned by these various methods (11):-

(i) Assemble the biographical information in chronological order.
(ii) Attach to it indications given of attitudes and explanations of reasons for changes in direction during this period.

On this basis the interviewer can make certain assessments:

(i) What trends and particular behaviour patterns are discernible.
(ii) What progress has the individual made in his or her career.
(iii) How do these compare and what is being looked for and with other people either in the job or generally.

2.3.5 The Offer of Employment

On the basis of the selection assessment, and assuming that a suitable candidate has emerged from the process, the employer can make a formal offer. It is usual for an oral offer to be initially made, and some time may be allowed for the individual to consider the offer. If both parties arrive at a suitable agreement a written offer can be made. The written offer needs special care, particularly with regard to the following points (28):

(i) The remuneration must be appropriate to the job and attractive to the candidate but consistent with the earnings of current staff.
(ii) The position must be named and any special conditions stated, (eg. for the initial three months you will be under training at our Head Office).
(iii) The individual must be informed of the essential conditions of employment, including hours, holidays, bonuses and any fringe benefits.
(iv) Any requirements for confirmation of the position must be stated (eg. if the position is subject to satisfactory references or a medical examination).
(v) The next stage of the process must be defined (eg. the date when the offer must be agreed).

It is also important at this stage to inform the unsuccessful applicants in writing of the outcome of the selection process.
2.3.6 Employment Law and Personnel Selection

It is unlawful for an employer to discriminate against an employee or job applicant on the grounds of sex according to The Sex Discrimination Act 1975, and on the grounds of race according to The Race Relations Act 1976. Both the Equal Opportunities Commission (EOC) and the Commission for Racial Equality (CRE) have issued Codes of Practice for the purpose of eliminating discrimination in employment. A failure to comply with any of the provisions of these codes does not render a person liable to legal proceedings but the Commissions' recommendations are admissible in evidence before industrial tribunals (16).

Therefore employers must take all possible measures to ensure that there is no direct or indirect discrimination in their job descriptions, person specifications, advertisements and selection procedures (6).

Direct discrimination occurs where, on the grounds of sex, marital status or race a person is treated less favourably than a person of the opposite sex, a single person or person not of the same racial group (16).
2.4  INDUCTION

2.4.1 Induction Programme

The induction programme of new employees has to be regarded as a comprehensive and systematic programme continuously monitored and evaluated (6).

✓The aim of the induction programme is to integrate new employees into the organization and their roles in particular, as soon as possible. The objectives of the programme are therefore as follows (6):

(i) That they should understand the function, aim and objectives of the organization as a whole.
(ii) That they should understand the specific objectives to be achieved by their sections and their personal responsibilities and expected contributions to the achievement of these objectives.
(iii) That the necessary initial training and work experience should be planned to enable them to fulfill these responsibilities.
(iv) That comprehensive information should be provided on the following subjects: conditions of employment; working arrangements; the system of personnel management and especially the arrangements and opportunities for staff development; the whole range of facilities provided for the benefit, welfare and recreation of employees.
(v) That positive measures should be taken to facilitate the social adaptation of new employees.
(vi) That the induction programme should be continuously monitored and its total effectiveness assessed.

Figure 1 illustrates the summary of the main elements of an induction system.

Thomason suggests that in essence, what is intended by this use of training is the familiarisation of the individual with the physical and cultural situation in which he or she will be expected to operate (10).
INITIAL INTERVIEWS
Conducted by line manager & personnel officer covering:-
Details of the induction programme.
Organizational objectives & functions.
Personal objectives & job.
Work conditions & facilities.
Personal needs & problems etc.

TRAINING
On the job.
Specific courses (internal/external).

WORK EXPERIENCE
Job variety.
Visits & attachments.

SOCIAL ADAPTATION
Assistance by line managers & members of the work group.

FOLLOW-UP INTERVIEWS
Conducted by line manager & personnel officer in the form of performance appraisal & career development interviews.
Check progress & general welfare.
Initiate required changes.

Figure 1. Summary of the Main Elements in an Induction System (6).
2.5 PAY AND BENEFITS MANAGEMENT

2.5.1 Salary Administration

Salary administration is concerned with deciding how and what staff should be paid, and with the techniques and procedures for designing and maintaining salary structures, appraising and rewarding staff and exercising salary control (17).

A major concept in salary administration is that of equity which involves setting internal and external salary relationships fairly.

The labour content of goods and services makes up a major part of the overall cost. Therefore it is a central problem for an organization to achieve productivity, which is the relationship of expenditure and the work carried out in return for it.

The aims of salary administration are as follows (17):-

(i) To ensure that sufficient suitable people are attracted to join the organization.
(ii) To encourage suitable staff to remain in its employment.
(iii) To provide appropriate rewards for good performance and incentives for further improvements in performance.
(iv) To provide for fairness and equity in setting pay levels and differentials in accordance with the relative values of jobs.
(v) To be flexible enough to accommodate changes in the relative market rates for jobs for different skills.
(vi) To achieve simplicity in operation in order to aid staff understanding and to minimise administrative effort.
(vii) To ensure that salary policies are consistent with statutory requirements.

These aims are achieved by the implementation of salary policies and procedures.

Certain factors have a bearing on determining salary levels. External factors include the laws of supply and demand, inflation (which imposes instability and external pressures on the whole pay structure) and macro patterns of income distribution within the whole economy. Internal factors include the laws of supply and demand within organizations as well as outside, for example surpluses and scarcities will affect salaries especially where external recruitment is difficult.
Clearly an individual should be paid in accordance with his contribution to achieving the objectives of the organization (known as the intrinsic value), and the individual's rewards should be in balance with the rewards received by others (known as equity).

2.5.2 Salary Policies

Salary policies are defined by the senior management of the organization and illustrate the emphasis which the organization places on money as a means of retaining and motivating its staff. Braybrooke suggests that such policies should include the following points (17):

(i) Salary levels.
(ii) The salary structure where appropriate.
(iii) The methods used to determine salary levels.
(iv) The methods of reviewing and progressing salaries.
(v) Salary control procedures where appropriate.
(vi) Total remuneration (i.e. the optimum mix between salary and other benefits).
(vii) Communication (what information should be given to staff on the salary policies).

The following situations would indicate that the company's salary policy requires review:

(i) Problems in attracting sufficient calibre recruits.
(ii) High labour turnover.
(iii) Low morale/effort because of inadequate incentives.
(iv) Complaints from staff because of real or apparent inequities.
(v) A salary structure where there is no clear relationship between pay and levels of responsibility.
(vi) A salary structure where there is insufficient flexibility for rewarding improved performance.
(vii) Increments appear to be unrelated to merit or to levels of responsibility.
(viii) Strains within the system because some occupations are more sensitive to market rate pressure.
(ix) Insufficient room at the top to allow adequate salaries to be paid to senior managers.
(x) Pressure from below so that the salaries of junior supervisors are less than the earnings of their subordinates.
(xi) Absence of any systematic procedure for grading or evaluating jobs.
Wage Administration

Wage rates for hourly rated personnel sometimes include a proportion which is calculated on the individual's output. The various terms used are described below (6):-

(i) The basic or flat rate: this is the amount of money paid for an hour's work. It is also sometimes called the 'hourly rate'. Time rates are predetermined rates per hour paid at the end of the week. The flat rate is often used where the work does not lend itself to any kind of measurement.

Sometimes in addition to the basic rate a bonus payment may be made. This payment by results method may be calculated as follows:-

(ii) Straight piecework: here the employee is paid according to his output. Either an amount is paid for the production of each item or a specific time is allowed for the completion of the item, and this can be called the 'time allowed' scheme. If the employee completes the work in less than the allowed time he is still paid for the original time, and as a result he is able to increase his earnings by completing more of the pieces per shift. The bonus is calculated by allowing for the difference between the time allowed and the actual time expressed as a percentage of the wage.

(iii) Differential piecework: this is similar to the 'time allowed' system however the amount of bonus is shared between the company and the individual, the wage cost being adjusted with output. As a consequence the company takes a proportion of the bonus as production rises.

(iv) Measured daywork: here the wage is fixed on the basis that the employee maintains a specified level of performance known as the 'incentive level'. This level is calculated in advance and the employee is put under an obligation to try and achieve the specified level.

(v) Small group incentive schemes: typically in this case a bonus is paid to group members when group targets are achieved or exceeded. This method can have benefits in encouraging members to work as a team in order to achieve their objectives.

(vi) Long term, large group schemes: these schemes work in a similar way to small group schemes however they work on a longer time scale and may include the whole workforce. This can have benefits in involving everyone within the organization in achieving overall company targets.
2.5.4 Job Evaluation

Job evaluation involves assessing the relative demands of various jobs within an organization. Its main purpose is to provide a basis for relating differences in pay rates to differences in job requirements. It can be used to assist in developing a pay structure.

The job evaluation process is involved in looking at the job rather than the seniority or merit of the person doing it, although these can be additional factors in determining pay rates.

Braybrooke argues that job evaluation is not an exact science (17). The aim is to be systematic and inevitably any assessment of the total demands of a job relative to another will involve some subjectivity which can give rise to differences in opinion.

For successful job evaluation everyone must be involved (e.g., management, employees and unions). The evaluation can be split into two types: non-analytical and analytical. Two commonly used methods for each type are discussed as follows:

Non-analytical. Here jobs are looked at as a whole and ranked in relation to all other jobs. A ranking table is then compiled and the ranked jobs grouped into grades. 'Paired comparison' can be used here where each job is matched with all the others individually and given two points where the job is considered superior, one point each where they are judged equal and none if the job is inferior. Total points scores are then obtained and a rank order emerges. Figure 2 shows a compiled rank order comparison for a number of typical local authority jobs, and figure 3 shows the variation obtained when three different groups of students carried out this exercise. The variation in the groups' decisions indicates the subjectivity of this method.

Analytical. This system is an analytical method which breaks down each job into a number of factors, for example skills, responsibility, physical and mental requirements and working conditions. Points are awarded for each factor according to a predetermined scale and the total points decide a job's placing in the rank order.
Figure 2. Example of Job Ranking for Typical Local Authority Jobs.

### JOB DEFINED BY KEY

<table>
<thead>
<tr>
<th>K</th>
<th>J</th>
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<td>4</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>7</td>
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</tbody>
</table>

Scores are awarded as follows:–

0 = Lower job grade
1 = Equivalent job grade
2 = Higher job grade

Eg. When comparing a dustman with a police inspector, if the dustman were graded as lower, then that position would score '0' and the police inspector would score '2'.

---

25
Table 1. The Variation in Job Ranking Results from Three Different Groups.

<table>
<thead>
<tr>
<th>JOB RANK</th>
<th>GROUP A RESULTS</th>
<th>GROUP B RESULTS</th>
<th>GROUP C RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chief Fire Officer, Police Inspector</td>
<td>Chief Fire Officer, Police Inspector</td>
<td>Chief Fire Officer, Police Inspector, Head Librarian</td>
</tr>
<tr>
<td>2</td>
<td>Head Librarian, Police Sergeant</td>
<td>Head Librarian</td>
<td>Police Sergeant</td>
</tr>
<tr>
<td>3</td>
<td>Traffic Warden, Ambulance Driver</td>
<td>Ambulance Driver</td>
<td>Traffic Warden, Ambulance Driver</td>
</tr>
<tr>
<td>4</td>
<td>Railway Signalman, Postman, Milkman, Dustman</td>
<td>Railway Signalman</td>
<td>Postman, Milkman</td>
</tr>
<tr>
<td>5</td>
<td>Lavatory Cleaner</td>
<td>Police Sergeant</td>
<td>Railway Signalman</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Traffic Warden</td>
<td>Dustman</td>
</tr>
<tr>
<td>7</td>
<td>Postman, Dustman</td>
<td></td>
<td>Lavatory Cleaner</td>
</tr>
<tr>
<td>8</td>
<td>Milkman</td>
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</table>

Groups A, B and C were made-up of students attending the Institute of Personnel Management course 'The Work of the Personnel Department' (1991). The results indicate the variability in the decisions made on job ranking between the different groups.
The following table shows the main advantages and disadvantages for different job evaluation techniques (17):-

<table>
<thead>
<tr>
<th>Technique</th>
<th>Main Advantages</th>
<th>Main Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOB RANKING</td>
<td>Simple: no special skills required.</td>
<td>Crudeness of 'overall worth' criteria.</td>
</tr>
<tr>
<td></td>
<td>Fast: less committee time.</td>
<td>No real indication of degree of difference between jobs.</td>
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<tr>
<td></td>
<td>Applicable to any range level/type of work.</td>
<td>Difficult to give rational arguments to justify an appeal.</td>
</tr>
<tr>
<td>JOB GRADING/CLASSIFICATION</td>
<td>Relatively fast &amp; cheap.</td>
<td>Suspicions of pre-determination.</td>
</tr>
<tr>
<td></td>
<td>New jobs can be fitted in easily.</td>
<td>Generally limited to narrow job populations, eg. clerical, technical.</td>
</tr>
<tr>
<td></td>
<td>Adequate with narrow, clearly defined job ranges.</td>
<td>Difficult to establish clear grade definitions or interpretations.</td>
</tr>
<tr>
<td>POINTS WEIGHTING</td>
<td>Provides the discipline of a marking scale.</td>
<td>High degree of skill required in selecting factors &amp; deciding weighting.</td>
</tr>
<tr>
<td></td>
<td>Points values show the relative differences between jobs in numerical terms.</td>
<td>Time consuming to install.</td>
</tr>
<tr>
<td></td>
<td>Makes eventual grading quite easy.</td>
<td>Considerable clerical detail required.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Can lead to many time consuming arguments over trivial differences.</td>
</tr>
<tr>
<td>FACTOR COMPARISON</td>
<td>Scale constructed to be 'tailor-made' for the organization.</td>
<td>Construction of scales complicated &amp; difficult to explain to employees.</td>
</tr>
<tr>
<td></td>
<td>Relatively easy to use for other jobs once set up.</td>
<td>Method is time consuming, considerable clerical detail is needed.</td>
</tr>
<tr>
<td></td>
<td>Scale expressed in monetary units &amp; requires no conversion.</td>
<td>Rates do not remain constant, fluctuation can throw the scale out of balance.</td>
</tr>
</tbody>
</table>
2.5.5 Pay Structures

The flexibility of pay structures ranges from very rigid rates for age or service, to structures which are flexible and can accommodate most individual increments. It is important to maintain a consistent approach whilst keeping enough scope to be able to reward the outstanding performers.

Most scales relate salary to the grade of the job. Following job evaluation a series of jobs, grades can be developed using any of the methods discussed in section 2.5.4. If the scales are drawn on a diagram, with grades lettered A to E (A being the lowest), a salary scale could be as shown in figure 3 (6).

The level of overlap of scales requires careful thought due to the implications for transferal between grades. An overlap of 10 to 20% is usual between grades, and the salary level at the top of the range is commonly 20 to 50% higher than at the bottom of the range (6). Incorporating a large number of grades, as found in many public sector organizations, makes promotion a relatively easy matter whilst devaluing its significance (14). However a structure with relatively few grades can enhance the significance of promotion whilst decreasing the flexibility. It can be possible to control progression through a pay grade in order to ensure higher rewards and faster progress for staff earning good appraisal reports (14). This is illustrated in figure 4.

Profit-related bonus schemes are frequently used to reward employees. In the UK the most frequently used financial measures of performance of the work of senior managers, is pre-tax profits followed by return on capital employed (18). Group bonus schemes can be operated and these can be either discretionary or rewarded from a reserved pool and distributed as a percentage of salary. Non-financial measures of performance include the following (19):

1. Narrative descriptions of performance.
2. Evaluation scales using ratings which may vary from poor to excellent.
3. Time limits and target dates for completion of projects.
4. Ratios, such as number of errors per employee.
5. Objective and quantifiable measures of output.

Performance related pay schemes covering all employees are operated in the UK by Mars Confectionary, Jaguar Cars and Rank Xerox. Mars operate a 'status free' culture where all employees are termed associates and all jobs are evaluated in the same system where the acquisition of skills and experience is rewarded by increments. Their bonus plan pays out bonuses usually in the range 10 to 25% (14).
Figure 3. Salary Scales by Grade.

1 Far exceeds basic requirements in nearly all aspects
2 Exceeds basic requirements in most aspects
3 Exceeds basic requirements in some respects
4 Meets basic requirements

Minimum

Figure 4. Salary Range Broken into Quartiles to Provide a Section for Each of the Categories of Performance.
The policy at Jaguar Cars is to maintain bonus earnings as a significant proportion of total earnings for all employees. A profit-sharing scheme is added to this at the discretion of the board, and a percentage of profits is distributed annually in the form of shares equally to all employees who have been with the company for more than one year. The shares have to be kept in trust for two years after which they can be sold or transferred into the employee's name. The company also operates a 'save as you earn' share purchase option scheme (20).

The Rank Xerox scheme involves bonus payments to managers which are linked to the return on assets, growth in revenue and profits before tax. Bonuses have typically run at 25% on top of basic salary.

2.5.6 Employee Benefits

Graham and Bennett define a fringe benefit as 'a reward to an employee apart from a wage or salary. It usually provides, at the expense of the employer, goods or services which the employee would otherwise have to pay for himself' (28).

Fringe benefits awarded to employees can include the following:

(i) Luncheon Vouchers.
(ii) Mortgage Subsidies. Typically awarded in the financial sector eg. building societies and banks.
(iii) Cars. Now liable for taxation.
(iv) Health Care Schemes. Typically free or subsidised membership of BUPA or PPP.
(v) Permanent Health Care. This generally provides insurance for a guaranteed income for an extended period.
(vi) Pensions. Either contributory or non-contributory.
(vii) Life Assurance.
(viii) Clothing Allowances. Often provided to workers operating in dirty or hazardous environments.
(ix) Canteen. Food prices are often maintained at a low level through company subsidies.
(x) Petrol.
(xi) Training. Training courses which are not of direct relevance to an employee's position may be provided free of charge or subsidised. Time off (eg. day release) may be allowed. Allowances for the purchase of books may be provided.
(xii) Loans.
(xiii) Subsidised Travel. Reduced fares on public transport may be provided to employees in certain sectors (eg. British Rail, British Transport Police or British Airways).
(xiv) Additional Holidays. These may be allowed as an option to overtime payments.

(xv) Creche. A creche may be operated to assist mothers in returning to work.

(xvi) Relocation Expenses. Assistance may be given to certain employees when either joining a new company or moving offices with their current company.

Fringe benefits are usually not directly related to merit, but they often improve with status or length of service. They have to be administered correctly, otherwise dissatisfaction can arise due to perceptions of favouritism or unfairness.

Often the benefit to an employee of fringe benefits can be worth more than the direct cost to the company. For example, company cars bought through fleet purchase schemes can be substantially cheaper than for a single purchaser, and creche facilities also provide benefits to the company by attracting people to work for that organization. There is also the status factor associated with some fringe benefits which appeal to some individuals, and company cars do, again, tend to have a high perceived value in this area.
2.6 PERFORMANCE EVALUATION

2.6.1 Purposes and Objectives

Performance evaluation of staff is directed at identifying whether the amount of work effort or contribution put out by the person concerned is adequate or satisfactory in relation to a company's established performance standards (10).

A performance evaluation plan within a company or organization may attempt to satisfy the following objectives:-

(i) Establishing what actions are required of the individual in a job in order that the objectives for the section or department are realised.
(ii) Establishing the key or main results which the individual will be expected to achieve in the course of his or her work over a period of time.
(iii) Assessing the individual's levels of performance against some standard, to provide the basis for remuneration above the basic pay rate.
(iv) Identifying the individual's levels of performance to provide a basis for informing, counselling, training and developing them.
(v) Identifying those persons whose performance suggests that they are promotable at some date in the future and those whose performance requires improvement to meet acceptable standards.
(vi) Establishing an inventory of actual and potential performances within the undertaking to provide a basis for manpower planning.
(vii) Monitoring the undertaking's initial selection procedures by providing an assessment of actual performances against recruiters' expectations.
(viii) Improving communication about actual work tasks between different levels of authority in the job hierarchy.

The assumption is that an organization will be more effective as a result of implementing some form of evaluation system, however the purposes vary from 'organization-centred' to 'individual-centred' and are mainly involved with establishing controls on the behaviour of people or bringing about change in their behaviour by (21):-

(i) Evaluation: to enable the organization to share out the money, promotions and perquisites apparently 'fairly'.
(ii) Auditing: to discover the work potential, both present and future, of individuals and departments.
(iii) Constructing succession plans: for manpower, departmental and corporate planning.
(iv) Discovering training needs: by exposing inadequacies and deficiencies that could be remedied by training.
(v) Motivating staff: to reach organizational standards and objectives.
(vi) Developing individuals: by advice, information and attempts at shaping their behaviour by praise or punishment.
(vii) Checking: the effectiveness of personnel procedures and practices.

Organization-centred performance evaluation involves developing the individual towards the global needs of the organization, whereas individual-centred performance evaluation involves development of the individual for his specific role.

2.6.2 Performance Appraisal

Staff appraisal procedures have many different purposes. All appraisal procedures aim to develop people along with their organizations by using the information about the behaviour of people at work.

Appraisals are often carried out regularly in organizations so that employers may talk to their employees about their performance at work. Unlike a day to day 'chat' with a manager, a formal appraisal system can develop a greater degree of consistency by ensuring that managers and employees meet formally and regularly to discuss performance and potential.

In the past most appraisals have been carried out for 'white collar' employees. However this helps to perpetuate the feeling of 'them and us'. The appraisal of 'blue collar' employees can improve their motivation and can help them to make useful suggestions about how their jobs can operate more effectively. In addition growing interest in flexible working practices, the harmonisation of terms and conditions of employment and the growth of new technology have blurred the differences between 'blue' and 'white collar' workers (22), and many organizations are now extending the benefits of appraisal to all employees (23).

Some organizations operate an 'appraisal period'. That is a specified month or two months of the year in which all appraisals must be completed, countersigned and returned to the personnel or training department (2). Other organizations operate a continuous appraisal cycle which is ongoing throughout the year. The Northamptonshire Local Education Authority is introducing an appraisal system for its school teachers and headteachers which will operate on a biennial cycle as illustrated in figure 5 (26).
The management of an appraisal system involves arranging for the printing and despatch of appraisal forms, a record of the date when the forms were despatched and are due for return, collating the results of the appraisal and the general monitoring of the system. Most performance appraisal forms should contain provision for (23):-

(i) Basic personal details, i.e. name, department, post, length of time in the job.
(ii) Job title.
(iii) Job description.
(iv) A detailed review of the individual's performance against a set of job related criteria.
(v) An overall performance rating.
(vi) General comments by a more senior manager.
(vii) Comments by the employee.
(viii) A plan for development and action.

In addition there should be some guidance notes explaining the objectives of the scheme and how the appraisal interview should be conducted.
Appraisal systems should be designed with line managers for use by line managers (2). Line managers would expect the personnel specialist to:-

(i) Advise on the objectives of the scheme.
(ii) Suggest alternative approaches.
(iii) Assist in the identification of appropriate criteria.
(iv) Advise on the appropriate format for the written report.
(v) Develop and implement appropriate training.
(vi) Supply the paperwork and an appropriate timetable for completion.
(vii) Carry out the necessary administration.
(viii) Analyse appraisal reports and take follow-up action.
(ix) Evaluate the effectiveness of the scheme and suggest modifications or redesign as appropriate.

Once the appraisal scheme is in operation line managers will become involved in:-

(i) Interview planning to ensure that the discussion focuses on achievement and development.
(ii) Conducting constructive interviews so that appraisees understand how they are performing and can have positive ideas on how to develop themselves.
(iii) Ensuring that follow-up action is initiated and monitored.
(iv) Ensuring that the discussion during the appraisal is used as the basis for continuing dialogue between appraisals.

It is important that the appraisal interview is prepared correctly; that it is uninterrupted; that enough time is put aside; that the appraiser is relaxed and listens to all comments made; that the interview room is laid out in a relaxing fashion (24).
An Institute of Personnel Management survey showed that 82% of employers questioned operate performance appraisal schemes. The following reasons were given for operating such schemes (25):

<table>
<thead>
<tr>
<th>Reason for Reviewing Performance</th>
<th>Percentage of Companies Surveyed (%)</th>
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<tbody>
<tr>
<td>To assess training &amp; development needs.</td>
<td>97</td>
</tr>
<tr>
<td>To help improve current performance.</td>
<td>97</td>
</tr>
<tr>
<td>To review past performance.</td>
<td>98</td>
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<tr>
<td>To assess future potential/promotability.</td>
<td>71</td>
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<tr>
<td>To assist career planning decisions.</td>
<td>75</td>
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<tr>
<td>To set performance objectives.</td>
<td>81</td>
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<tr>
<td>To assess increases or new levels in salary.</td>
<td>40</td>
</tr>
<tr>
<td>Others eg. updating personnel records.</td>
<td>4</td>
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</tbody>
</table>
2.7 TRAINING AND DEVELOPMENT

2.7.1 The Need for Training

Landy and Trumbo define training as:

'Planned activities on the part of an organization to increase job knowledge and skills, or to modify the attitudes and social behaviour of its members in ways consistent with the goals of the organization and the requirements of the job' (41).

From this definition it is implied that for somebody to need training there is some shortfall of performance between what the person can do now and what is required of him or her. This shortfall may be because of a poor standard or low output of current work, or because of a new job or activity the person is expected to undertake in the future (27).

A shortfall of performance may indicate the training need, but it can also indicate poor management or supervision, a lack of staff, poor or incorrect equipment and low morale amongst many other potential variables. The identification of training needs is usually not the task of the trainer alone. Ideally line management, and the staff themselves, should be the people to identify the need; this can clearly take place through the appraisal system.

When a training need has been formulated the trainer's job is to design the training, including setting objectives and the programme, and to ultimately run the training course. Training is often thought of in terms of courses, however it may be best carried out at work, spread over a period of short sessions or spread over a period of months.

Whatever form the training takes it is necessary to check or validate the progress made because (27):

(i) It is necessary to determine if the training has met the objectives derived from the need.

(ii) It is important to know if the original need has been met. For example a very successful programme may have been run to improve typing speeds, but if the original need was a low typist output (because of poor spelling and hence the need for a lot of correction) the problem would probably not have been solved.

(iii) It is useful to know that the training is cost effective (ie. the financial benefit to the organization is greater by doing the training than if it had not been done).
To summarize, the training cycle involves going back to look at needs and objectives and therefore resulting in continuous improvement of ongoing training activities. Figure 6 below illustrates the training cycle.

![Diagram of the training cycle]

Figure 6. The Training Cycle.

2.7.2 The Approach to Training

Like any other business process, training can be very wasteful if it is not carefully planned and supervised (28). A systematic approach will ensure that the training given is appropriate to the needs of the individual, and once the training is complete it must be analysed in order to assess its benefit.
The systematic approach to training follows the programme below (28):

(i) The job is analysed and defined.
(ii) Reasonable standards of performance are established, perhaps by reference to experienced employees.
(iii) The employees being considered for training are studied to see if the required performance standards are being attained.
(iv) The difference (if any) between (ii) and (iii) is considered. It is often called the 'training gap', though it may be partly due to faults in the organization, poor materials or defective equipment.
(v) Training programmes are devised to meet the training needs revealed in (iv). Training is given and appropriate records kept.
(vi) The performance achieved after training is measured; if the training programme has been successful the performance standards set in (ii) should be achieved. This is termed 'validation'.
(vii) An attempt is made to calculate the cost of the training and compare it with the financial benefit gained by the improved performance of the employees. The training programme may be revised if a method can be seen of achieving the same result at lower cost. This is termed 'evaluation'.

Although practical difficulties are recognized in following any methodical system, a framework similar to that illustrated in figure 7 is suggested if the problem of 'training for training's sake' is to be avoided (29).

### Figure 8. A Systematic Approach to Training.

1. Define training policy
2. Identify training needs
3. Prepare training plans
4. Prepare training programmes
5. Make & communicate practical arrangements
6. Carry out the training
7. Record the training
8. Decide how to review training
9. Carry out training reviews
10. Take action as a result of training reviews
2.7.3 Training Policy

An organization's training policy should be designed to meet its overall requirements in conjunction with policy in other areas. The policy will allow for flexibility, however it should include statements regarding (29):

- (i) The links between the organization's overall objectives and training.
- (ii) The purpose and priorities of training and resources to be committed.
- (iii) The person(s) responsible for training.
- (iv) The types of training to be developed, opportunities available to staff and general administration.

Policies generally should be clear-cut and precisely written, so that everyone in the organization knows exactly how employees are affected. An example of a training policy statement could be as follows (30):

'To provide adequate training facilities to enable employees to learn to do their job effectively and to prepare themselves for promotion.'

The overall training policy can then be expanded as follows into specific areas (30):

- (i) Induction: All new employees will be helped to settle into their jobs by receiving instruction in the company's organization, policies and working practices.
- (ii) Operator: All employees will be given full training in the skills, methods and equipment used in their jobs.

2.7.4 Training Objectives

A training objective consists of (27):

- (i) Terminal behaviour.
- (ii) Conditions.
- (iii) Standards.

Terminal behaviour is a statement of what the trainee should be able to do (behaviour) at the end (terminal) of the training programme or session.

For example 'at the end of the training programme the trainee will be able to service a car', or 'at the end of the training the trainee will be able to hang wallpaper'.

The underlined phrases define the trainee doing something observable, and that is the required behaviour.
Conditions define the situation under which the trainee will have to work. These will include aids given or desired, the place of work and the position of work.

For example 'service a car in the workshop using the standard tools available', or 'hang wallpaper in any house required using a paste table and step ladder'.

The conditions underlined are job related, and should not be included if not appropriate. It is unproductive to train someone to use an aid if it will not be used in his place of work, and it is of equal importance to make the conditions as realistic as possible where they are defined.

Standards define levels of acceptable performance in relation to the job. They are concerned with levels of quality and productivity. There is little point training someone to be 100% accurate if he only has to be 85% accurate, or to meet an output target of 100 in three minutes if he only has to meet 100 in five minutes (27).

For example 'using the standard tools service the car to the manufacturer's specification', or 'ensure that the wallpaper is vertical and that individual sheets do not overlap'.

Training objectives may also be written in tabular form as shown below:-

<table>
<thead>
<tr>
<th>Terminal Behaviour</th>
<th>Conditions</th>
<th>Standards</th>
</tr>
</thead>
</table>
| Service a car      | - In a workshop  
|                    | - By himself  
|                    | - Using standard equipment | - Manufacturer's specification  
|                    |                        | - Ministry of Transport requirements |
| Hang wallpaper     | - Any house  
|                    | - With partner  
|                    | - Using paste table and step ladder | - Vertical  
|                    |                        | - No overlapping  
|                    |                        | - Satisfaction of customer |
2.7.5 Analysis of Training Needs

Effective training is tied to the achievement of predetermined goals (31). McGehee and Thayer suggest that the determination of training needs in an organization should contain three types of analyses (32):

(i) Organizational Analysis: primarily centres upon the determination of the organization's goals, its resources and the allocation of resources relating to the goals. Such analysis establishes the framework in which training needs can be defined more clearly.

(ii) Operations Analysis: this includes the determination of what the worker must do in terms of the specific behaviour required if the job is to be performed effectively. Concentration should be placed upon the task and not the individual.

(iii) Man Analysis: this reviews the knowledge, attitudes, or skills required of the individual and what alterations must be made if he is to contribute effectively to the organizational objectives.

As a consequence of the above analyses the following questions are raised (33):

(i) Where is the organization going?
(ii) What performance is necessary from each individual if he is to contribute effectively to the organization's objectives?
(iii) Is each individual adequately prepared in knowledge, attitudes and skills to perform the job effectively? If not, what training will be necessary for him to be adequately prepared?

Identification of individual training needs may be done via an appraisal system, by the use of assessment centres or, if there is no formal system in operation, by discussing with each departmental head at least once a year the training needs of individuals in that department (34). It is important at this stage that the employee's manager is involved in the identification of the training need, and that he is kept informed of the training plans for staff in his department. Pearson and Coulthard comment that commitment from line management is essential if training is to be successful (34).

Discussions with the trainee should form an integral part of this analysis. In some instances there may be a basic lack of confidence in his own ability to do the job. Training may therefore be required not so much to teach him how to do the job as to assure him that he does know how (35).
2.7.6 Designing a Training Programme

In devising training programmes the need is to know what skills and knowledge are required to perform particular jobs well, and to make an appreciation of the training necessary to acquire such skills and knowledge (30).

Several of the optimum conditions for training are summarised below:-

(i) It is important that the training programme is planned in a logical manner so that each succeeding step builds upon the previous one, and consequently the probability of success increases because the trainee encounters the steps in sequence. The best course for changing behaviour is to bring about the transition through a progression of small, orderly steps (33).

(ii) The previous experience of the individual trainee affects his further learning experiences. New material is related to his previous knowledge. New behaviour is formulated using existing foundations as a basis (36).

(iii) Training in one activity can be transferred to another if there are similar components and principles. All problems of a particular class can be solved by the application of a general principle (33).

(iv) Learning is accomplished through impressions received and interpreted by the senses. Learning new skills is accomplished through seeing, hearing and doing things (37). The use of a variety of training methods that appeal to a number of senses and that provide the opportunity for personal experience provides an advantage over single-appeal techniques.

(v) The variation in abilities, backgrounds, experiences, readiness to learn and a number of additional factors cause individual trainees to acquire new knowledge, skills and attitudes at varying rates of speed. Therefore training programmes must be adapted to the training speeds of individual trainees (33).

(vi) Many types of learning are characterized by learning curves that display breakthroughs in the acquisition of knowledge and skills, followed by plateaux indicating that little or no learning is apparent. The plateaux in turn are followed by further upward advancements (38).
Essentially the training programme is a summary of all the training required to enable an individual to perform a particular job to the required standard. It involves a number of different sets of decisions (35).

First an overall learning objective must be defined, and this can then in turn be subdivided for particular sections of the training programme. The objective will relate back to the trainee's job and to a specific procedure with which he is required to comply. Ultimately the content of the training programme will be determined by the number and type of learning objectives that it is designed to meet.

The training sequence must then be defined. For the learning to take place effectively the trainer will need to build from the known to the unknown, and it is important that tasks which will become everyday activities are mastered early on in the programme.

All levels within an organization, from board level to the shop floor, will all have a particular training need at some point. Training achievements can either be recognised through passing examinations or by the award of a certificate upon successful completion of a course. A substantial range of examination bodies are in existence (eg. BTEC or City and Guilds), however many of the vocational skills recognised by these bodies are being incorporated into the National Vocational Qualifications (NVQ's) framework.

When structuring a training course a choice must be made of the learning methods to be used, and this will be dictated by the learning objectives. A guide to the range of learning methods is given below (35):

<table>
<thead>
<tr>
<th>Method</th>
<th>Explanation</th>
<th>Area of Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) On-job training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEMONSTRATIONS</td>
<td>Trainer shows trainee how to</td>
<td>Knowledge-how to</td>
</tr>
<tr>
<td>TRAINING MANUALS</td>
<td>Written collection of instructions</td>
<td>Knowledge-how to, standards required</td>
</tr>
<tr>
<td>COMPUTER BASED</td>
<td>Computer 'trains' operator step by step as task is carried out</td>
<td>Practical-how to</td>
</tr>
<tr>
<td>Method</td>
<td>Explanation</td>
<td>Area of Learning</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>WORK SAMPLES</td>
<td>Trainer watches trainee</td>
<td>Practical-how to</td>
</tr>
<tr>
<td>SPECIFIC PROJECTS</td>
<td>Trainee researches and reports on specific topic</td>
<td>Knowledge-facts, investigating &amp; problem solving skills</td>
</tr>
<tr>
<td>(ii) Off-job training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FILMS/TAPE SLIDE PRESENTATIONS</td>
<td>Sound and vision projections</td>
<td>Knowledge-how to, preparation for skills training</td>
</tr>
<tr>
<td>DEMONSTRATIONS</td>
<td>Trainer shows trainees how to</td>
<td>Knowledge-how to, preparation for skills training</td>
</tr>
<tr>
<td>PROGRAMME LEARNING- COMPUTER-BASED TRAINING</td>
<td>Book/machine which paces reader and checks knowledge through questioning</td>
<td>Knowledge-facts, occasionally skills</td>
</tr>
<tr>
<td>LECTURES</td>
<td>Trainer delivers prepared exposition</td>
<td>Knowledge-facts &amp; opinions</td>
</tr>
<tr>
<td>TUTORIALS/SEMINARS</td>
<td>Discussion of work produced by trainees</td>
<td>Critical examination of knowledge &amp; opinions</td>
</tr>
<tr>
<td>DISCUSSION GROUPS</td>
<td>Discussion, chaired sometimes by trainer, of specific topic</td>
<td>Inter-personal skills, changing attitudes</td>
</tr>
<tr>
<td>BRIEFING GROUPS</td>
<td>Short exposition by trainer, followed by questions &amp; discussion</td>
<td>Knowledge-facts &amp; opinions &amp; how to</td>
</tr>
<tr>
<td>Method</td>
<td>Explanation</td>
<td>Area of Learning</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>PRACTICALS</td>
<td>Trainees operate under trainer's supervision &amp; receive feedback</td>
<td>Practical-how to</td>
</tr>
<tr>
<td>ROLE PLAYS</td>
<td>Trainee plays role for practical exercise</td>
<td>Changing attitudes, developing inter-personal skills</td>
</tr>
<tr>
<td>BUSINESS GAMES/COMPUTER</td>
<td>Board games or computer games with evolving case studies allowing trainees to see the consequences of their decisions</td>
<td>Practical-analysing, deciding</td>
</tr>
<tr>
<td>SIMULATIONS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CASE STUDIES</td>
<td>Write-up of an incident with questions for analysis</td>
<td>Practical-analysing, deciding</td>
</tr>
<tr>
<td>INCIDENT METHOD</td>
<td>Trainees are given last item in sequence of events &amp; asked to reconstruct situation by questioning trainer</td>
<td>Practical-analysing, questioning</td>
</tr>
<tr>
<td>IN-TRAY EXERCISES</td>
<td>Trainees given a series of memos &amp; other papers to be put in order of priority</td>
<td>Practical-assessing priorities &amp; deciding</td>
</tr>
<tr>
<td>GROUP PROJECTS</td>
<td>Group asked to investigate &amp; report with recommendations</td>
<td>Knowledge-facts, investigating, analytical, problem solving &amp; team skills</td>
</tr>
<tr>
<td>INDIVIDUAL PROJECTS</td>
<td>Individual investigates, reports &amp; makes recommendations</td>
<td>Knowledge-facts, investigating, analytical &amp; problem solving</td>
</tr>
</tbody>
</table>
The training method selected is also highly dependent upon the environment in which the training is conducted, the level and ability of the trainees and the facilities available. The more sophisticated computer based training programmes involve substantial development and cost, and are only warranted on long term or commercial training courses.
2.8 EMPLOYMENT LAW

2.8.1 Sources of Employment Law

The sources of employment law are as follows (39):

(i) Legislation - Primary Legislation (Acts or Statutes).
   - Secondary Legislation (Statutory Instruments).
   - European Community Law directly enforceable in the UK Courts and tribunals (eg. European Regulations on equal pay).

(ii) Codes of Practice - Practical guidelines on good industrial relations (IR) practice in a particular area. While such codes are not in themselves law, they are of 'persuasive authority' before courts and tribunals and can be used by either side to a case as evidence pointing towards their compliance with a particular legal requirement.

(iii) Common Law - Known also as 'Judge-made Law'. Courts follow the precedent set by higher courts when dealing with a similar problem. They are bound to follow the legal principle which the Superior Court relied upon when deciding the case. Industrial tribunals (IT's) are bound by previous decisions of the Employment Appeal Tribunal (EAT), the Court of Appeal and the House of Lords. IT's do not themselves set precedents for other tribunals to follow.

The law relevant to human resource management is that concerned with individual employment and association for economic purposes (10). These structure the fundamental relationships involved in employment by establishing the terms and conditions under and contexts in which people either cooperate in the process of creating wealth or engage in exchange transactions in the course of distributing it.
The main legal institutions of labour law are as follows (39):

HOUSE OF LORDS
|
appeal
|
COURT OF APPEAL (CIVIL DIVISION)
|
appeal
|
EMPLOYMENT APPEAL TRIBUNAL
|
appeal
|
INDUSTRIAL TRIBUNAL

2.8.2 The Contract of Employment

Contract is based on the voluntary acceptance of obligations to another - for example, an obligation to perform work and an obligation to pay for the work done (10).

It would appear that courts take the view that the more the employer is able to exercise control over the activities of the worker the more likely that worker will be defined as an employee. Courts now regard the 'control test' as only one factor in determining whether the contract is one of employment. The situation was analysed by MacKenna in Ready Mixed Concrete (South East) Ltd versus Minister of pensions and National Insurance [1968] (14):

'a contract of service exists if the following three conditions are fulfilled: (i) the servant agrees that in consideration of a wage or other remuneration he will provide his own work and skill in the performance of some service for his master (ii) he agrees, expressly or impliedly, that in the performance of that service he will be subject to the other's control in a sufficient degree to make that other master (iii) the other provisions of the contract are consistent with its being a contract of service'.

A contract can be established either orally or by conduct (10). However it is the employer's duty to provide a written statement detailing the terms and conditions of employment no later than thirteen weeks after employment has begun.
The minimum requirement for the terms and conditions are detailed as follows (40):-

(i) Identity of the parties to the employment contract.

(ii) The date on which the employment began.

(iii) A statement on whether 'any employment with a previous employer counts as part of the employee's continuous period of employment' with the present employer, and if so, the date on which the continuous period commenced.

(iv) The title of the job which the employee is employed to do.

(v) The terms of the contract applicable at a date to be specified which is not more than one week before the date on which the statement is given to the employee. The terms which have to be specified (or whose source has to be indicated) are:-

(a) the scale or rate of remuneration or the method used to calculate it;
(b) the intervals at which the remuneration is paid (eg. weekly or monthly);
(c) any terms and conditions relating to hours of work (including any defining normal working hours);
(d) any terms and conditions relating to:-
   - entitlement to public and other holidays and to holiday pay (information provided must allow the employee to calculate entitlements to holiday pay and accrued holiday pay (in the event of termination)
   - incapacity for work due to sickness or injury, and any entitlement to sick pay
   - pensions and pension schemes (if not provided for in an Act of Parliament), and whether there is a contracting out certificate in force;
(e) the length of notice which the employee is obliged to give and entitled to receive to determine the contract of employment. (If the contract is for a fixed term, the date on which it is due to end must be stated.)

(vi) The employee must also be issued with a note which specifies:-

(a) any disciplinary rules applicable to the employee (or refers the employee to a readily accessible document which contains them);
(b) the person or committee to whom the employee can apply if dissatisfied with any disciplinary decision relating to him, and what actions beyond the appeal are open;
(c) the person (or position) to whom an employee can take a complaint or grievance about his or her employment in order to secure redress, and the manner in which the application has to be made;
(d) whether there are steps beyond that indicated in (c) and if so what they are (or refers them to a document which contains them).

As stated in the Employment Protection (Consolidation) Act (EPCA) 1978, it is also a requirement that any change in an employee's terms and conditions of employment should be confirmed to him in writing not more than one month after the change, and all records must be altered accordingly (16).

Mumford suggests that there are five distinct aspects of the offers and demands of the parties to an employment contract, and that not all of these are explicitly defined in the legal context. The five elements are as follows (42):-

(i) Knowledge: The undertaking establishes what it requires in its employees in respect of knowledge and skill and the means it will employ to meet these requirements. The employee establishes what he is prepared to offer to meet his requirements for income or security etc.

(ii) Motivation: The undertaking establishes what psychological contribution it will demand of its employees and what incentives will be offered to secure this. The employee establishes the extent of the contribution he is prepared to make for the incentives offered.

(iii) Efficiency: The undertaking sets up standards of performance which it will expect of employees, and they in turn form their own perspectives of what criteria are relevant to the wage-effort bargain struck.

(iv) Commitment (ethics): The undertaking must determine how much of the human personality it wants or is prepared to engage in the pursuit of its corporate ends. Employees must comparably determine how far they are prepared to commit themselves in this way.

(v) Interest (task structure): The work which the undertaking offers may be interesting or boring, routine or challenging, and the employees' expectations of work may accord with what is on offer or conflict with it.
Mumford's work would suggest that the legal definitions for the contract of employment should not be regarded as complete definitions of what is involved in the employer/employee relationship.

Where specific terms have not been included in the contract in writing (known as 'express terms'), certain duties of the parties will be assumed under common law (known as 'implied terms'). These duties are as follows:

(a) The employee will be assumed, in the absence of contrary statements, to have agreed to:

(i) be ready and willing to work;
(ii) provide personal service;
(iii) avoid wilful disruption of the employer's undertaking;
(iv) obey reasonable or lawful orders;
(v) work only for the employer in the period during which he is being paid by him to work;
(vi) account for any profits received;
(vii) respect the employer's trade secrets;
(viii) take reasonable care of the employer's property when it is entrusted to him;
(ix) take reasonable care when engaged in the employer's service.

(b) The employer, in similar circumstances, is assumed to have agreed to:

(i) pay for work done or service rendered under the contract;
(ii) provide opportunity to earn remuneration and to provide work in some circumstances, for example where 'practice' is important to maintain the value of the service;
(iii) take reasonable care for the safety and well-being of the employee whilst at work;
(iv) indemnify the employee for any loss sustained in the performance of his or her duties;
(v) treat the employee in a suitable manner in order to sustain mutual trust and confidence.

2.8.3 Key Employment Legislation

Legislation establishes rights for specific categories of employee, including women and racial minorities. The legislation has been established in respect of certain conditions, including sex discrimination and health and safety at work. The key legislation is as follows:

(i) Sex Discrimination Acts 1975 and 1976. Individuals are not to be discriminated against on grounds of sex, marital status, or race, whether in recruitment, at engagement, at termination or during employment.
(ii) Wages Act 1986. In some trades the employee must be paid as an adult worker, at a statutory minimum rate for the work done.

(iii) Health and Safety at Work Act 1974. The employee must be provided with a healthy and safe working environment and with instruction in appropriate methods of safe working.

(iv) Race Relations Act 1976. This aims to outlaw preferment on the basis of colour, race, nationality or ethnic or national origin. This covers selection for employment, promotion, advancement and training. 'Direct discrimination' is committed where choice is based on the grounds listed, and 'indirect discrimination' is committed where the proportion of employees in an organization does not reflect the mixture of the local population.

(v) Disabled Persons Employment Act 1944. A duty is imposed on employers with twenty or more employees to employ a percentage of disabled persons. The current percentage, fixed by order after consultation, is three per cent.

(vi) Equal Pay Act 1970 (plus Equal Pay (Amendment) Regulations 1983). All contracts of employment are deemed to contain an equality clause which guarantees men and women equal pay and conditions for like work; work rated as equivalent by job evaluation; and work of equal value in terms of its demands on the employee.

(vii) Trade Union Act 1984 and Employment Act 1988. Both have been devised to regulate the internal affairs of trade unions in areas such as the appointment of officers and the calling of strikes. The intention of these Acts was that by involving trade union members in the internal decision-making process, then industrial action would be restrained.

(viii) Redundancy Payments Act 1965. This makes provision for severance payments to be made to employees who are dismissed as redundant. The provisions of the Act are now included in the Employment Protection (Consolidation) Act 1978 (EPCA). The legislation enables an employer to dismiss a person on the grounds of redundancy if the employer has ceased trading, changes location, or the requirements of the business for employees to carry out work of a particular kind have ceased.
The list above attempts to highlight some of the most fundamental Acts of employment legislation, however the Employment Protection (Consolidation) Act 1978 (EPCA) has established a number of rights which are deemed to be terms agreed between the employer and the employee. Some of the key sections of this act define the following rights (10):-

(i) Trade union membership.
(ii) Time off allowed for industrial relations activities.
(iii) Time off for public duties.
(iv) Payments due in the event of employer insolvency.
(v) Receipt of an itemised pay statement.
(vi) Guaranteed payments for lay-off.
(vii) Payments in the event of medical suspension and not to be dismissed because of a medical suspension.
(viii) To receive a written statement the main terms of the contract.
(ix) Not to be unfairly dismissed for a reason not given and to request and receive a statement for the reason or reasons for dismissal.
(x) To maternity pay in event of pregnancy.
(xi) To return to work after pregnancy.
(xii) To have the Industrial Tribunal or the courts review the conduct of the employer in respect of any aspect of relationship which is governed by statute.

2.8.4 Termination of the Contract of Employment

Cowling and Mailer state that at common law 'a contract is most usually terminated by performance' (14). In this case both the employer and the employee carry out their contractual obligations without recourse to law and the relationship between the parties is ended.

The EPCA gives all employees who have been continuously employed for four weeks or more the right to minimum periods of notice as follows (34):-

(i) Not less than one week's notice to an employee with more than four weeks' and less than two years' continuous service.
(ii) Not less than two week's notice to an employee who has more than two year's and less than three years' continuous service.
(iii) One additional week's notice for each additional year of service up to a maximum of twelve weeks' notice for twelve years' continuous service or more.

An employee is required to give one week's notice after four weeks' employment, and this does not increase with the service period. However these requirements do not over-rule the provision of longer periods of notice on both sides in the contract of employment.
From the study of texts on this subject it appears that the majority of employment contracts are terminated in one of the four following ways:–

(i) Breach. The contract terminates if either the employer or the employee breaks the contractual obligations and the other party elects to demonstrate that he regards this violating conduct as a termination of the contract.

(ii) Variation. Where the parties agree to amend the terms of the contract (eg. salary review or improved fringe benefits) the old contract terminates. A new contract will then come into immediate effect, and the law regards the employment period as having occurred under one continuous contract.

(iii) Notice. The contract terminates if either the employer or the employee gives notice to the other that he wishes to terminate the contract and that notice duly expires. The employer can terminate employment immediately by paying the salary or wages in lieu of notice.

(iv) Frustration. If an event has occurred which is beyond the control of the employer and the employee (eg. war or a period of long incapacitating illness) the performance of the contract may be impossible or futile. If such a situation develops, and it has not been expressly allowed for in the contract, the contract will be deemed terminated.

Redundancy has been defined in section 2.8.3, and is a method of terminating the employment contract. A redundant employee is entitled to redundancy pay providing he has worked for the organization for at least two years, and has worked for at least sixteen hours per week (or eight hours for over five years' service). Redundancy pay is calculated at the following rates (28):–

(i) For each year of employment between the ages of eighteen and twenty-one, half a week's pay.
(ii) For each year of employment between the ages of twenty-two and forty, one week's pay.
(iii) For each year of employment between the ages of forty-one and sixty-five (sixty for women) one and a half week's pay.
2.9 THE COLLECTION AND USE OF PERSONNEL INFORMATION

2.9.1 Introduction

The sections already covered in this chapter highlight the great variety of information generated in relation to the human resource management function in an organization. Figure 8 illustrates the personnel information which must be monitored in order to maintain full management control of this area of the organization.

Figure 8. Personnel Information within an Organization.
Personnel records must be maintained in a controlled fashion by an organization for specific key reasons. These are essentially as follows:

(i) To monitor personnel costs to the organization.
(ii) To monitor any potential skill shortages which may arise.
(iii) To satisfy employee expectations (i.e. employees should be aware that the organization acts in a professional manner in the way in which it manages its human resources).
(iv) To comply with any legislative requirements, including the Data Protection Act which protects the individual against the misuse of personal details held on a computer or word processor. All data users must register with the Data Protection Registrar, informing him of what kind of personal information is held.

As a result of the need to keep the data listed above, the personnel records should provide the following information:

(i) A store of current and accurate information about the company's employees.
(ii) A guide to the action to be taken regarding an employee, particularly by comparing him with other employees.
(iii) A guide when recruiting a new employee, e.g. by showing the rates of pay received by comparable employees.
(iv) An historical record of previous action taken regarding employees.
(v) The raw material for statistics which check and guide personnel policies.
(vi) The means to comply with statutory requirements.

An employee's personal record should be maintained throughout his service with the organization. Initially the application form is the basis of the record, and the formal offer letter of employment should be added to this. These documents should be placed in a securable filing cabinet or cupboard in individually labelled files for each employee. The file can then be added to as required, for example with appraisal reports, sickness certificates and disciplinary records.
A summary of the information in the personal file should be made on an employee record card which can be easily read and compared with other employee records (28). The essential details to be included on the record card are as follows (34):

(i) Name, address and telephone number.
(ii) Sex.
(iii) Marital status.
(iv) Employee number (where required).
(v) Date of birth.
(vi) Nationality.
(vii) Union membership.
(viii) Next of kin.
(ix) Details of warnings.
(x) National Insurance number.
(xi) Date of starting.
(xii) Absence summary.
(xiii) Pension details.
(xiv) Salary or wage details (including reviews).
(xv) Disabled persons registration number (where appropriate).
(xvi) Job title.
(xvii) Department.

In addition to the above list a summary of the training achieved should be kept, however with the increasing requirement of third party auditing by external assessors for quality assurance certification purposes, it would be necessary to maintain a separate training file.

2.9.3 Personnel Statistics

Hackett suggests that careful comparison of data, from one year to the next, between departments, between companies and against predictions, can help to highlight ineffective personnel policies or procedures and assist in the most effective use of the manpower resource (35).

The following statistics can be used:

(i) Manning Levels. The number of people employed in particular categories, or on particular types of work are compared for manpower utilization studies. The ratio of indirect labour to direct labour can also be calculated in this way as follows:

\[
\frac{\text{No. of employees engaged in production}}{\text{Total number of employees}} \times 100 = \text{MANNING RATIO}
\]
Productivity Indices. This calculation is based on the number of units produced in a given period as follows:

(a) OUTPUT RATIO

\[
\text{Total output in period} \div \text{No. of men} = x \text{ units per man per period}
\]

(b) VALUE OF OUTPUT RATIO

\[
\text{Total value of output in period} \div \text{No. of men} = fy \text{ per man per period}
\]

Current Staff Costs. A per capita figure can be calculated as follows:

\[
\frac{\text{Annual payroll cost}}{\text{Average no. employed in year}} = \text{AVERAGE PER CAPITA COST}
\]

This figure can be compared with the output value figure to determine what return each employee generates.

Future Staff Costs. This can be calculated by adjusting the per capita cost to take account of likely levels of pay settlement, changes in benefits etc.

Recruitment Costs. A per capita figure for particular categories of employee can be calculated. The formula is as follows:

\[
\frac{\text{Total recruitment costs for category/department}}{\text{Total required for category department}} = \text{PER CAPITA COST OF RECRUITMENT}
\]

This formula can also be used to study specific costs areas such as advertising or the use of recruitment agencies.

Training Costs. These can be calculated on a per capita basis, and either divided amongst the total staff numbers or just between the trainees themselves.
(vii) Absenteeism. The formula for this is:

\[
\frac{\text{No. of man hours lost in period}}{\text{Total possible man hours in period}} \times 100
\]

= ABSENCE RATE

(viii) Labour Turnover. The formula for this is:

\[
\frac{\text{No. of leavers in a period}}{\text{Average no. of employees in period}} \times 100
\]

= TURNOVER

This figure is conventionally represented in terms of annual turnover, therefore if the period taken is three months the result should be multiplied by four, and if the period is six months the result should by multiplied by two, etc.
2.10 CHAPTER SUMMARY

This chapter has covered the main areas of human resource management by studying the sequence of events in the employment cycle. Consequently the subject of recruitment was covered initially, followed in sequence by selection; induction; pay and benefits management; performance evaluation; training and development; employment law, and the collection and use of personnel information.

In practice all of the areas listed do not operate exclusively, for example a successful performance evaluation system can feed information to both pay and benefits management (in order to reward for achievement), and to training and development (in order to provide employees with training appropriate to their needs). Equally the selection process is dependent on the recruitment process for its effectiveness, since an unsuitable pool of candidates could result in wasted interviews at best, or the appointment of an unsuitable candidate at worst.

Employment law is a core running throughout the human resource management function. Legislation is in place to cover the processes of recruitment and selection (eg. the Race Relations Act and the Sex Discrimination Act), together with the employment process (eg. the Employment Protection (Consolidation) Act). This legislation makes it imperative for an organization to professionally manage its human resources, for failure to do so could result in accusations of sexual or racial discrimination which may result in substantial financial penalties for the organization, and at the very least a poor reputation as an employer may result in the best employees moving to other organizations.

Section 2.9 on the collection and use of personnel information summarises how all the areas discussed in this chapter provide information to the personnel management function. On the basis of the analysis of key management information it is possible to provide financial data relating to the human resource element of the organization, and this can play a vital part in corporate planning not only for human resources, but for the organization as a whole.
3. QUALITY MANAGEMENT

3.1 OVERVIEW

According to the International Standards Organization (ISO) definition, quality is 'the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs' (45). Stated needs are determined by a contract or specification, whereas implied needs are a function of the market and must be identified and defined. These needs include the following factors (48):

(i) Safety.
(ii) Availability.
(iii) Maintainability.
(iv) Reliability.
(v) Usability.
(vi) Economics (price).
(vii) Environment.

Other than price which is defined in monetary units, all other factors must be translated into specifications. These specifications must be measurable in order to provide a quantifiable and operational definition of quality. If the specifications do not satisfy the needs of the customers they must be amended accordingly.

Lock and Smith define quality as 'the degree of congruence between expectation and realisation', or 'the matching of what you wanted with what you got' (49). These definitions suggest that there is a high degree of perception involved with the customers' requirements, and it is the responsibility of the producer to ensure that these requirements are understood; only then will the specification be defined to the satisfaction of the customer.

Quality management is involved with the management systems required for achieving the specification of the product or service. It operates at three levels: quality control, quality assurance and total quality management, and the following sections in this chapter describe the subject in greater detail.
Quality engineering originates from the application of statistical methods of quality control in manufacture. Much of the pioneering work was done at the Bell Telephone Laboratories in the 1920's, and also at the Hawthorne Works of the Western Electric Company. Although the control chart used in statistical process control (SPC) techniques was developed during this period, little overall impact was made.

Eventually the development of quality departments began in the manufacturing sector, and these were usually called either QC or QA Departments. These departments had the responsibility for covering inspection and testing, and quality engineering. Their prime activity was to separate good products from bad by inspection and test; this resulted in a decreased risk of shipping defective products to customers.

Centralized quality departments have a reputation amongst writers on the subject of fostering the belief that the achievement of quality was their responsibility, and this in turn hampered efforts at eliminating the causes of the defective products. Consequently high costs were generated, however this was not a major handicap at the time because it was a philosophy shared by most companies.

With the advent of World War Two industry was faced with the burden of producing military products. The strategy involved diverting production from civilian products (eg, cars and household appliances) to military equipment (eg, munitions and aircraft). During this period a new strategy for achieving quality emerged due to the requirement of military equipment to be of high reliability; this strategy was called Statistical Quality Control (SOC). In the USA the War Production Board sponsored numerous training courses in statistical techniques evolved by Bell during the 1920's, however once government contracts came to an end SOC largely died due to a lack of funding.

Due to the lack of availability of consumer products during the war, a massive shortage of goods developed amid a substantial build-up of purchasing power. Once the war was over, it took the rest of the 1940's for supply to meet demand, and consequently manufacturing companies gave priority to meeting delivery dates. As a result of this policy the quality of the product deteriorated, and the habit of giving top priority to delivery dates then persisted long after the shortages were gone.
After the war Japan embarked on a policy of reaching national goals by trade, rather than by military means. The main obstacle for selling products internationally was their reputation for shoddy products prior to the war. However in an effort to solve their quality problems Japanese teams were sent abroad to study new approaches. These new approaches led Japan to vastly increase their share of foreign markets through providing quality goods which many other nations are attempting to match. This intense competition was the catalyst for an industry-wide interest in quality management, which initially affected manufacturing industry and in the past ten years has been applied to the construction sector..
3.3 QUALITY MANAGEMENT SYSTEMS

3.3.1 Quality Control

According to the International Standards Organization (ISO), quality control (QC) 'involves operational techniques and activities aimed both at monitoring a process and eliminating causes of unsatisfactory performance at relevant stages of the quality loop (quality spiral) in order to result in economic effectiveness' (45).

Quality control essentially requires the operation of a simple inspection-based system, under which one or more characteristics of a product is examined, measured or tested and compared with specified requirements to assess its conformity. This system can be applied to raw materials and bought-in components and manufactured products at any stage in the production process. Any products which do not conform to the specification are either reworked, scrapped or passed on a concession.

A QC system is 'an after-the-fact screening process with no prevention content other than, perhaps, identification of suppliers, operations or workers producing non-conforming products' (46). Under a QC system the following control systems would be expected:-

(i) Drawing control.
(ii) Raw material and intermediate stage product testing.
(iii) Some operator inspection.
(iv) Logging of basic process performance data.
(v) Feedback of process information to operatives, setters and production supervisors.

3.3.2 Quality Assurance

Quality assurance (QA) builds on the principles of QC to encompass the planning and design phase of the production process. ISO 8402 (1986) defines QA as 'containing all those planned and systematic actions required to provide adequate confidence that a product or service will satisfy given requirements for quality' (45). The producer will be required to implement the following service to the customer if QA is to be fully effective in the organization (47):-

(i) To conform with the specification, and to meet other understood requirements. This in turn should create confidence in the integrity of the product and service which in turn should remove the need for direct testing and evaluation of items by the customer.
(ii) To take every measure to ensure positive quality for the physical and non-physical characteristics of the products and services.

(iii) To inform the customer about the quality of the product and to provide help and guidance, together with service for safe usage of the product.

(iv) To provide documented evidence for respective procedures and measures in production for the attainment of quality. This requires evidence of formally documented and implemented quality programmes.

Additional elements required when developing a QA system from a QC system are a more comprehensive quality manual, gathering and limited use of quality costs, use of statistical process control (SPC) and auditing of the quality system. The emphasis with QA is towards prevention of defects and problems (known as non-conformance) rather than detection of non-conformance.

3.3.3 Total Quality Management

ISO 8042 (1986) defines quality management as 'that aspect of the overall management function that determines and implements the quality policy, and as such, is the responsibility of top management' (45). The detail of the quality system may be no greater than that applied to the QA system, however total quality management (TQM) involves the implementation of quality management principles to all departments within the organization, including sales, finance, personnel and all non-manufacturing functions. Wellemi suggests that TQM encompasses not only the working processes, disciplines and standards, but also the wholehearted cooperation of staff, its involvement and motivation and the recognition that only the best is good enough (50).

Feigenbaum defines TQM as 'as effective system for integrating the quality-development, quality-maintenance, and quality-improvement efforts of the various groups in an organization so as to enable marketing, engineering, production, and service at the most economical levels which allow for full customer satisfaction'(51). He goes on to define the scope of TQM as eight stages in the industrial cycle, as shown in figure 9.
Figure 9. TQM Covering Eight Stages of the Industrial Cycle.
3.3.4 British Standard 5750

British Standard 5750 (BS 5750) is a Standard dealing with quality systems that can be used for external quality assurance purposes. The Standard is set out in five main parts which are equivalent to International Standards as follows (57):

<table>
<thead>
<tr>
<th>BRITISH STANDARD</th>
<th>INTERNATIONAL STANDARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 0 Section 0.1 Principal concepts &amp; applications comprising: Guide to selection &amp; use.</td>
<td>ISO 9000 Guide to selection &amp; use.</td>
</tr>
<tr>
<td>Part 0 Section 0.2 Principal concepts &amp; applications comprising: Guide to quality management &amp; quality system elements.</td>
<td>ISO 9004 Quality management &amp; quality system elements.</td>
</tr>
<tr>
<td>Part 1 Specification for design/development, production, installation &amp; servicing.</td>
<td>ISO 9001 Model for quality assurance in design/development, production, installation &amp; servicing.</td>
</tr>
</tbody>
</table>

BS 5750 was designed to set a Standard for the internal management procedures an organization will commonly operate if it is to provide a customer with a consistent quality of a product or service, and the consequent assurance that it has done so.

The first edition of BS 5750 was published in 1979 in the three parts listed above, and most terms were appropriate to manufacturing industry, although it could be interpreted for construction applications.
The first edition of the Standard was used as the basis for an International Standard prepared between 1983 and 1986 by the International Standards Organization (ISO), and when the ISO 9000 series was published in 1987, a revised BS 5750 was issued. The second edition of BS 5750 which is still current has text and numbering which is identical to the International Standard. ISO 9000 has also been published as a European Standard, EN 29000.

The different parts of the Standard are used in the following applications (58):-

(i) Part 0, sections 0.1 and 0.2 provide guidelines on the selection and use of other Parts of the Standard, and clarify some of the basic concepts used in QA.

(ii) Part 1 is used when the company (known as the supplier) has to demonstrate conformance to specified requirements from design through to production, installation and servicing.

(iii) Part 2 covers production and installation, in which case the design is not carried out by the supplier.

(iv) Part 3 covers the procedures necessary to assure a customer that the final inspection and testing has been carried out correctly.

Most contracts are let on the basis of designs produced by architects and engineers (58), and as a consequence Part 2 of the Standard would be applicable to a contracting organization operating under such conditions. The subject headings which require formal procedures in Part 2 of the Standard are as follows (56):-

<table>
<thead>
<tr>
<th>SECTION NUMBER</th>
<th>HEADING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Management responsibility</td>
</tr>
<tr>
<td>2</td>
<td>Quality system</td>
</tr>
<tr>
<td>3</td>
<td>Contract review</td>
</tr>
<tr>
<td>4</td>
<td>Document control</td>
</tr>
<tr>
<td>5</td>
<td>Purchasing</td>
</tr>
<tr>
<td>6</td>
<td>Purchaser supplied product</td>
</tr>
<tr>
<td>7</td>
<td>Product identification &amp; traceability</td>
</tr>
<tr>
<td>8</td>
<td>Process control</td>
</tr>
<tr>
<td>9</td>
<td>Inspection &amp; testing</td>
</tr>
<tr>
<td>10</td>
<td>Inspection, measuring &amp; test equipment</td>
</tr>
<tr>
<td>11</td>
<td>Inspection &amp; test status</td>
</tr>
<tr>
<td>12</td>
<td>Control of non-conforming product</td>
</tr>
<tr>
<td>13</td>
<td>Corrective action</td>
</tr>
<tr>
<td>SECTION NUMBER</td>
<td>HEADING</td>
</tr>
<tr>
<td>----------------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>14</td>
<td>Handling, storage, packaging &amp; delivery</td>
</tr>
<tr>
<td>15</td>
<td>Quality records</td>
</tr>
<tr>
<td>16</td>
<td>Internal quality audits</td>
</tr>
<tr>
<td>17</td>
<td>Training</td>
</tr>
<tr>
<td>18</td>
<td>Statistical techniques</td>
</tr>
</tbody>
</table>

Further additional parts to BS 5750 have been introduced: Part 4 is a guide to the use of Parts 1, 2 and 3; Part 8 is a guide to quality management and quality system elements for services; and Part 13 is a guide to the application of Part 1 for the development, supply and maintenance of software.
3.4 MANAGEMENT RESPONSIBILITY

3.4.1 Organization

A detailed literature review of publications and books produced over the past five years highlights that a quality system is essentially a combination of the management processes and resources which are implemented to achieve an organization's quality policy. BS 5750, Quality Systems, Part 0 states that 'a quality management system should be developed and implemented for the purpose of accomplishing the objectives set out in a company's quality policies' (52): this suggests that a primary objective in establishing a quality system is to satisfy the needs of the organization from an internal perspective.

If the organization's quality policy is to be effectively achieved, the chief executive must be the person ultimately responsible for ensuring that the structure is in place for this to happen, and Stebbing states that 'the senior executive of any organization is responsible for two things: the efficiency of the company and the quality of the goods or services which that company offers' (53). The organization's quality policy should address the following points (54):

(i) The commitment to quality.
(ii) Target market (or service) sectors and customers.
(iii) Relationships with customers.
(iv) Internal relationships.
(v) Relationships with suppliers and subcontractors.
(vi) Monitoring performance against customers needs and expectations and continuous improvement.

BS 5750 Part 2 states that management shall define and document its policy and objectives for, and commitment to, quality; the company shall ensure that this policy is understood, implemented and maintained at all levels in the organization (56).

Policy is essentially the direction in which the management wishes the organization to move, and objectives define the actions required to achieve the policy. Ashford suggests that a quality system will only function effectively if it is part of an overall management system established to achieve stated objectives in accordance with a defined policy (55).
3.4.2 Structure

Quality systems can be defined in terms of either 'centralized' or 'de-centralized' systems. Centralized systems emphasise the practice of QC, however they do vary from one organization to another. In this situation the quality operations are the responsibility of a QC department which is independent of the production department, and in a large organization the QC department may include a variety of technical experts. Although centralized QC departments have authority and independence and can be isolated from commercial pressures which may compromise decisions, they can grow into separate 'empires' which remove quality responsibility from operators. Ashford argues that this isolation precludes the production operatives from participating in the planning and organization of procedures for the prevention of defects, which in turn does not solve the cause of quality problems (55).

De-centralized systems place the responsibility for quality onto the production operatives. In such a system production managers develop plans and procedures for inspection and testing which ensures that the work done matches the specification required. Inspection and testing is mainly carried out by staff within the production area in accordance with the pre-defined plan. In order to ensure that the system operates effectively, an independent quality system manager should be appointed by senior management who oversees the effective operation of the system via supervision and auditing. BS 5750 Part 2 states that the company shall appoint a management representative who, irrespective of other responsibilities, shall have defined authority and responsibility for ensuring that the requirements of the British Standard are implemented and maintained (56).

Dale and Plunkett suggest that the organizational framework of a company has a direct effect on policy achievement, and that managers often fail to recognise the importance of the configuration of this framework on product quality decision making (46).

The Federation of Civil Engineering Contractors (FCEC) suggest that the quality assurance representative within the organization should answer directly to the managing director, which in turn provides the stimulus to the operation of the quality system. The development of a Management Organization Chart provides an invaluable tool for defining responsibilities for the achievement of quality, and an example of such a chart is shown in figure 10 (58).
Figure 10. Example Management Chart for a Construction Company.
3.4.3 Training

As a requirement of BS 5750 the organization must implement a training procedure. This should identify the training needs and provide for the training of all personnel activities which are defined in the Standard, and personnel carrying out specific tasks should be qualified on the basis of appropriate education, training and experience. Training records should also be maintained 56).

The FCEC interpret this clause in the Standard as follows (58):

(i) The staff and operatives employed in the supervision and execution of construction work are adequately trained for the duties they are required to perform; they should be assessed against the requirements of recognised national, industrial, educational or professional bodies or schemes.

(ii) Records should be kept of the training standards achieved in professional institutions (and other training) by staff holding positions of responsibility, and by operatives in relevant training schemes.

(iii) Staff training should be provided where necessary for the following skills:-

. inspection and testing techniques.
. the criteria for acceptance in specialist work.
. the efficient operation of the quality system.
. preparation of quality assurance documents.
. auditing and surveillance procedures.
. calibration and maintenance of measuring instruments and equipment.
. the process being undertaken.
. supplier and subcontractor assessment.

Ashford comments that the concept of inexperienced people being 'dropped in at the deep end' of a job in the hope that, by chance, they will learn enough to survive, is archaic and wasteful (55). Therefore formalized training systems which identify the training needs of each activity, and which ensure that people are not allocated tasks which they are not trained to carry out should help an organization to achieve a quality product as efficiently as possible.
3.4.4 Auditing

Auditing is an independent review to compare practice with prescribed procedures or desired requirements (59).

Auditing is carried out to verify the effectiveness of the quality programme on the organization. It is a planned and documented activity carried out in accordance with written procedures and checklists to verify by investigation, and the evaluation and examination of objective evidence, that applicable elements of a quality programme or plan have been developed, documented and effectively implemented in accordance with specified requirements (53).

In order to develop an auditing programme, it is necessary to define the different types of audit which are as follows (49):-

(i) Supplier Audits: A customer may audit a supplier against the contract requirements to examine how closely the supplier is working to the agreed contract conditions. This audit may include requirements defined in a quality system such as BS 5750.

(ii) Vendor Audits: A potential supplier is referred to as a vendor, and a company may wish to audit the vendor against proposed contract requirements. Such requirements can be defined in the supplier's internal documents, and it is possible that these may include the requirements stated in a quality systems standard.

(iii) Internal Audits: An organization can carry out audits internally to determine for management purposes how closely departments are working to the procedures detailed for each department. Results from such audits provide management information to determine whether the policy is being followed.

(iv) Second Party Audits: These are carried out by an external party, but within the requirements of the company. This follows the same pattern as the internal audit (iii), and is used where the organization may not have the necessary skills to conduct its own internal audits. Consultants may be used in such circumstances.
Third Party Audits: Approved bodies (known as accredited bodies) will assess organizations against a quality systems standard (e.g. BS 5750) and provide a certificate which records their perception that the organization at the time of the assessment had management systems which complied with the Standard. This method is intended to provide customers with assurance that the organization's products or services will be produced to a consistent standard.

The audit process, whether internal or external, should be established by a documented system which should detail the procedure on the following basis (55):-

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepare:</td>
<td></td>
</tr>
<tr>
<td>Agree programme.</td>
<td>Define which procedures will be audited against.</td>
</tr>
<tr>
<td>Request information.</td>
<td>Request any information from the auditee which may be of benefit before the audit.</td>
</tr>
<tr>
<td>Provide information.</td>
<td>Provide information to auditee as necessary regarding the audit programme.</td>
</tr>
<tr>
<td>Prepare audit plan.</td>
<td>List areas of procedures to audit against &amp; questions to ask auditee.</td>
</tr>
<tr>
<td>Audit:</td>
<td></td>
</tr>
<tr>
<td>Opening meeting.</td>
<td>Brief auditee &amp; manager on audit plan.</td>
</tr>
<tr>
<td>Audit interviews.</td>
<td>Follow through audit plan by interviewing auditee.</td>
</tr>
<tr>
<td>Closing meeting.</td>
<td>Complete audit with summary meeting with auditee &amp; manager.</td>
</tr>
<tr>
<td>Report &amp; Follow-up:</td>
<td></td>
</tr>
<tr>
<td>Audit report (preliminary).</td>
<td>Produce initial summary report for auditee &amp; manager on audit findings.</td>
</tr>
<tr>
<td>Propose corrective actions.</td>
<td>Discuss corrective actions with auditee &amp; manager.</td>
</tr>
<tr>
<td>Review proposals.</td>
<td>Agree corrective actions, implementation date &amp; follow-up audit date.</td>
</tr>
</tbody>
</table>
ACTIVITY | DESCRIPTION
--- | ---
Audit report. | Produce detailed audit report, listing agreed corrective actions & follow-up audit dates.
Implement corrective actions. | Auditee with management help implements agreed corrective actions.
Follow-up corrective actions. | Auditor conducts follow-up audit to ensure that corrective action has been implemented.
Completion report. | Audit is closed and completion report finalised.

Figure 11 below summarizes the audit programme together with the responsibilities of the parties involved.

<table>
<thead>
<tr>
<th>ACTION</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AUDITOR</td>
</tr>
<tr>
<td>PREPARE</td>
<td></td>
</tr>
<tr>
<td>Agree programme</td>
<td>yes</td>
</tr>
<tr>
<td>Request information</td>
<td>yes</td>
</tr>
<tr>
<td>Provide information</td>
<td>yes</td>
</tr>
<tr>
<td>Prepare audit plan</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>AUDIT</td>
<td>yes</td>
</tr>
<tr>
<td>Opening meeting</td>
<td>yes</td>
</tr>
<tr>
<td>Audit interviews</td>
<td>yes</td>
</tr>
<tr>
<td>Closing meeting</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>REPORT &amp; FOLLOW-UP</td>
<td>yes</td>
</tr>
<tr>
<td>Preliminary audit report</td>
<td>yes</td>
</tr>
<tr>
<td>Propose corrective actions</td>
<td>yes</td>
</tr>
<tr>
<td>Review proposals</td>
<td>yes</td>
</tr>
<tr>
<td>Audit report</td>
<td>yes</td>
</tr>
<tr>
<td>Implement corrective actions</td>
<td>yes</td>
</tr>
<tr>
<td>Follow-up corrective actions</td>
<td>yes</td>
</tr>
<tr>
<td>Completion report</td>
<td>yes</td>
</tr>
</tbody>
</table>

Figure 9. The Audit Programme.
3.5 DOCUMENTATION

3.5.1 Introduction

A review of current work suggests that the documentation required for a quality system which complies with BS 5750 includes the following:

(i) Quality policy.
(ii) Quality manual.
(iii) Procedures manual.
(iv) Specific manuals.
(v) Quality plans.
(vi) Method statements and checklists.

Figure 12 below summarizes this requirement.

Figure 12. The Documentation Pyramid.

The following sections describe each of the elements of the documentation in more detail.
3.5.2 Quality Policy

Section 3.4.1 has already discussed for need for a quality policy from a management perspective. This section elaborates the detail required for such a policy, which most authors on the subject agree is a prerequisite to implementing a quality system within an organization.

The quality policy is a formal written document which can identify its objective of quality leadership in the markets served by the organization's products and services (51). It can address the following issues:-

(i) How quality plays a role in the acceptance of the organization's products or services by its customers.

(ii) How quality plays a role in the business success of the organization and therefore its employees.

(iii) How quality considerations are of a primary importance with other major business factors in the corporate plan.

(iv) The importance of each employee knowing and understanding individual and organizational responsibilities toward the organizational quality goal.

(v) To provide guidance for how procedures should be carried out as responsibility is delegated throughout all operations.

(vi) How quality affects the organization's suppliers and subcontractors, and what is expected of them.

The example shown below of a quality policy is taken from an American electronics manufacturer, and provides a broad suggestion of what should be contained (51):

American Electronics Company
Quality Policy

Need for Policy

To enhance the Company reputation, competitive position, and profitability, it is necessary to produce products of good quality. Meeting this objective requires a properly directed approach by all functions to the elements which concern product quality.
Statement of Policy

It is the policy of this Company to market only products of a quality that will earn customer satisfaction by performing expected functions reliably and effectively in accordance with customer expectations and which are discernibly better than competitive offerings. In support of this objective, the Company continuously strives to lead its product field in research and development, design, manufacture, marketing, and product service related to its area of business responsibility.

Courses of Action

1. Selection of business opportunities. This Company will not accept business which will compromise its quality reputation. The customers' specifications will be reviewed to determine that they serve the common interests of the Company and to ensure that appropriate quality standards can be met.

2. Product development and design.

This section can go on to list and describe key areas of the company's activities.

Stebbing suggests that any declaration only becomes valid when signed by a person, or persons, of the highest authority (53). Consequently the quality policy of an organization should be signed by the chief executive if it is to have a substantial importance and be taken seriously by the employees and customers alike, and in this context it can be of value in the sales and marketing functions.

The FCEC suggest that to satisfy BS 5750, a contracting organization should consider the following structure for a quality policy (58):-

(i) The company's activities (eg. civil engineering or building).

(ii) Details of how the company places particular emphasis on obtaining client satisfaction, such as:

. meeting the specification set by the client.
. efficient construction, with value for money.
. adherence to construction programmes and budgets.

(iii) A statement to explain that the company operates a quality system, and that the quality manual describes the system including the allocation of responsibilities to company staff.

(iv) A statement to define the Standard to which the quality system is certified (eg. BS 5750: 1987: Part 2).
3.5.3 Quality Manual

The definition of a quality manual is set out in BS 4778 as 'a document setting out the general quality policies, procedures and practices of an organization' (60).

Lock and Smith describe a quality manual as including the general quality policy and the organization of the company, together with the responsibilities for quality. It should then outline the specific areas for control and defines by reference the lower level documents (e.g., the procedures manual) needed to carry out quality control and assurance (49).

As a result of these requirements the quality manual would be expected to have the following contents:-

(i) Introduction.
(ii) The organization's quality policy.
(iii) A description of how the quality system addresses each area of the operations. If the organization operates a quality system which conforms to a particular Standard (e.g., BS 5750 Part 2), then each clause from the Standard would be defined in terms of the operations.
(iv) A list of procedures in operation (e.g., the contents page of the procedures manual).
(v) The Organization Chart.

Ashford argues that the quality manual has two main purposes which are as follows (55):-

(i) To inform staff within the organization of the quality policy which has been adopted by management, and to advise of the ways in which the policy will be achieved.

(ii) To demonstrate to clients and purchasers that the organization operates a quality system capable of assuring the quality of its products or services.

Point (ii) above indicates the need to demonstrate to clients the organization's approach and commitment to quality via marketing. The quality manual does not detail specific procedures, it merely confirms that the required procedures are in place within the company procedures manual; consequently confidentiality can be maintained and current and potential customers can be satisfied.
The following example shows a typical contents page from a construction company quality manual (55).

<table>
<thead>
<tr>
<th>SECTION NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CONTROL</td>
</tr>
<tr>
<td>1.1</td>
<td>Authority</td>
</tr>
<tr>
<td>1.2</td>
<td>Table of Contents</td>
</tr>
<tr>
<td>1.3</td>
<td>Change Control</td>
</tr>
<tr>
<td>1.4</td>
<td>List of Manual Holders</td>
</tr>
<tr>
<td>2</td>
<td>CORPORATE POLICY</td>
</tr>
<tr>
<td>2.1</td>
<td>Objective</td>
</tr>
<tr>
<td>2.2</td>
<td>Quality Systems</td>
</tr>
<tr>
<td>2.3</td>
<td>Responsibilities of Management</td>
</tr>
<tr>
<td>2.4</td>
<td>Group Quality Assurance</td>
</tr>
<tr>
<td>3</td>
<td>COMPANY ORGANIZATION</td>
</tr>
<tr>
<td>3.1</td>
<td>Description</td>
</tr>
<tr>
<td>3.2</td>
<td>Management Structure</td>
</tr>
<tr>
<td>3.3</td>
<td>Management of Quality Assurance</td>
</tr>
<tr>
<td>4</td>
<td>COMPANY QUALITY SYSTEM</td>
</tr>
<tr>
<td>4.1</td>
<td>General</td>
</tr>
<tr>
<td>4.2</td>
<td>Scope and Compliance with Quality System Standards</td>
</tr>
<tr>
<td>5</td>
<td>PROJECT QUALITY ASSURANCE</td>
</tr>
<tr>
<td>5.1</td>
<td>Staff Responsibilities</td>
</tr>
<tr>
<td>5.2</td>
<td>Project Procedures</td>
</tr>
<tr>
<td>5.3</td>
<td>Project Quality Plans</td>
</tr>
<tr>
<td>6</td>
<td>APPENDICES</td>
</tr>
<tr>
<td>A</td>
<td>Reporting Relationships</td>
</tr>
<tr>
<td>B</td>
<td>Group Organizational Structure</td>
</tr>
<tr>
<td>C</td>
<td>Company Management Structure</td>
</tr>
<tr>
<td>D</td>
<td>Company Standing Instructions</td>
</tr>
</tbody>
</table>

3.5.4 Procedures Manual

The Longman New Universal Dictionary defines a procedure in the following ways (61):-

(i) 'a particular way of acting or accomplishing something'.
(ii) 'a series of ordered steps'.
(iii) 'an established method of doing things'.

These definitions essentially summarize the contents of the procedures manual, which contains the activities involved in conducting business which are relevant to the achievement of quality.
Whereas the quality manual provides the overview to the quality system, the procedures manual provides the detail for employees on how the organization actually operates. In general terms Stebbing states that the type of activities which are fundamental, 'regardless of customer requirement', are as follows (53):

(i) Administration.
(ii) Finance.
(iii) Document control.
(iv) Record storage, retention and retrieval.
(v) Audits.
(vi) Training.
(vii) Customer liaison.

However if the organization is to implement a quality system which conforms to BS 5750 Part Two, the following activities must also be incorporated into the procedures manual (56):

(i) Contract review: each contract has to be reviewed to ensure that the requirements are adequately defined and documented; that any requirements differing from those within the tender are resolved; and that the company has the capability to meet contractual requirements.

(ii) Purchasing: suppliers and subcontractors must be assessed and selected on the basis of their ability to meet the contract requirements; records of acceptable suppliers and subcontractors must be maintained; purchasing documents must contain clearly defined data; and the purchaser has the right to inspect the supplier or subcontractor at source if necessary.

(iii) Materials supply: procedures should be in place for the control of materials purchased by the client and by the company. Controls should be in place for inspection of the material, recording, identifying, sampling, storing and dealing with defective material.

(iv) Product identification and traceability: procedures should be implemented where necessary for identifying the product from drawings, specifications or other documents, during production, delivery and installation.

(v) Process control: where the product quality would be affected the contractor is required to produce documented work instructions before the work is carried out.
(vi) Inspection and testing: the supplier shall not use any incoming product until it has been inspected and tested or otherwise verified for use. Procedures should also detail in-process inspection and testing, final inspection and testing, and the control of inspection and test records.

(vii) Inspection, measuring and test equipment: procedures should be implemented for the control of calibrating and maintaining the equipment.

(viii) Inspection and test status: the acceptability of the works or materials fabricated on site should be identified.

(ix) Control of non-conforming product: procedures for controlling faulty of damaged products should be in place.

(x) Corrective action: any identified faults with procedures (forming the quality system) should be corrected via a formal procedure.

(xi) Handling, storage, packaging and delivery: procedures for protecting the product in the four stages listed must be defined.

(xii) Quality records: records relating to the quality system must be formally maintained.

It is important to emphasize that the procedures manual is unique to the organization for which it is written. Feigenbaum states that the procedures manual for each company will vary in format and content, and a whole range of such manuals exists in different forms and different degrees of detail to orient quality systems work to specific industrial situations (51).

Scrimshire perhaps summarized the uniqueness of the procedures manual for each organization by saying 'you must write down what you do, and do what you say you do' (62). Essentially the key factor in writing procedures is to accurately record what is done within the organization, and not what a manager would perhaps desire. If the organization wishes to comply with the requirements of BS 5750 then it may have to change certain practices, however the new practices should be in operation and not just in writing.
3.5.5 Quality Plans

The act of planning is thinking out in advance the sequence of actions to accomplish a proposed course of action in doing work to accomplish certain objectives (51). To achieve product or service quality many different elements of work are performed, perhaps by a number of people, in a given sequence. A variety of processes may by implemented to complete the work, and the establishment of a quality plan should answer the following questions (51):–

(i) What specific work needs to be completed?
(ii) When during the production cycle will each activity be done?
(iii) How will each activity be done?
(iv) What is the staff organization for the activity?
(v) Where is the work to be done, and what will be the location of plant and equipment?
(vi) What plant and equipment will be used?
(vii) What information (eg, drawings) and material is required to complete the work?
(viii) What decisions have to be made, and what is the criteria for making them (eg. material storage)?
(ix) Do actions have to be recorded, and in what form?

The questions listed are very general and could apply to almost any organization or process, and BS 4778 defines a quality plan as a document setting out the specific quality practices, resources and activities relevant to a particular process, service contract or project (60). BS 5750 Part 0 goes on to suggest that a quality plan should define (52):–

(i) The quality objectives to be attained.
(ii) The specific allocation of responsibility and authority during the different phases of the project.
(iii) The specific procedures, methods and work instructions to be applied.
(iv) Suitable testing, inspection, examination and audit programmes at appropriate stages (eg. design and development).
(v) A method for changes and modifications in a quality plan as projects proceed.
(vi) Other measures necessary to meet objectives.

The above headings resemble the requirements of a quality manual, which is expected since the quality plan is the element of the quality system which is specific to a particular project but never-the-less must satisfy the requirements of the relevant Standard.
Ashford states that 'to be of value, the first issue of a quality plan must be made before the commencement of work, and it is also essential that it should be a document which will be read, valued and used by those in control of work' (55). This emphasises that the quality plan is very much intended to be an 'active' document, which will be used and updated as necessary by those responsible for quality.

A typical quality plan will include the following sections (55):-

(i) GENERAL
This will be a general introduction to the plan.

(ii) QUALITY OBJECTIVES
This section details the contract specification, including specific drawing numbers.

(iii) ALLOCATION OF RESPONSIBILITIES
Here the main project responsibilities are defined, and a project organization chart is shown.

(iv) PROJECT PROCEDURES
This will define any specific company procedures relevant to the contract.

(v) WORK INSTRUCTIONS
This section breaks the project down into specific elements and references individual work instructions for each element.

(vi) INSPECTION, TESTING AND AUDITS
Here any inspection and test plans are referenced, together with the element of work addressed. If subcontractors are required to complete inspection and test plans then their responsibilities can also be defined in this section.

A list of records to be kept (eg. concrete placement record or cube test results) should be defined.

The project audit programme should also be defined in this section.

(vii) AMENDMENTS TO QUALITY PLAN
This section covers how the plan will be reviewed and amended if necessary.

(viii) OTHER MEASURES
This defines how long records will be maintained for after the completion of the project.
The FCEC's suggestion for quality planning agrees with the list above, and it goes on to suggest that the plan will depend on the degree of assurance to be applied (58). Therefore on small projects a single sheet of paper incorporating the following items may be sufficient:-

(i) Specification and main drawings (or reference to a drawing register).
(ii) The project organization structure.
(iii) A list of relevant procedures.
(iv) Testing and inspection requirements.
(v) Project programme.

The above suggestion was confirmed by the Building and Construction Business Development Manager of the British Standards Institute who suggested that the quality plan should be applied to all projects, however the level of detail in the plan should reflect the complexity of the work (63).

According to most references the responsibility for producing the quality plan should lie with the project manager or engineer at the tender stage since it may be a requirement to submit outline plans to the client at this juncture. Once the contract were formally awarded, the plan could be completed in greater detail to be of benefit to the manager. It is clearly a fundamental intention of the plan to be produced before the project begins so that it can be a tool to control quality from the beginning.
3.6 PROCUREMENT

3.6.1 Control

Within the field of quality management, procurement control is of major importance. As Stebbing states, 'the control over these activities is most important if one is to obtain value for money plus on-time delivery', and all QA standards emphasise the requirement for adequate controls (53).

BS 5750 Part Two contains a specific clause for purchasing. It states that 'the supplier shall ensure that purchased product conforms to specified requirements' (56). This section of the Standard covers the following areas:-

(i) Assessment of suppliers and subcontractors.

The organization should select suppliers and subcontractors on the basis of their ability to meet the requirements of the contract. Records of approved suppliers and subcontractors should be kept.

The type and degree of control exercised on the supplier should depend upon the product and previous performance.

(ii) Purchasing data.

Purchasing documents should clearly describe the product ordered including the type, class, grade or identification where appropriate. The relevant specifications, requirements, drawings or relevant data should also be stated, together with any standards.

(iii) Verification of purchased products.

Products can be reviewed at source where required by the company or organization, in order to ensure that they conform to specified requirements.

In the construction industry the contractor will purchase materials (eg. ranging from ready mixed concrete to wood screws), from suppliers. Additionally the contractor will usually place subcontracts for elements of the construction work, and some of these subcontractors may also purchase materials and even further let parts of their subcontracts. As a consequence the construction industry can be a complex environment in terms of procurement management, where many different parties can be embraced for satisfactory completion of a project.
Within the construction industry it would also be correct to consider the employer (eg. the architect or local authority) as a purchaser or customer. In this sense the individual or organization which places a contract for the construction work with a contractor can be termed the 'primary purchaser' (55). Figure 13 below illustrates the relationship between the primary purchaser and the contractor and his subcontractors and suppliers.

Figure 13. The Relationship Between Primary Purchasers, Contractors, Subcontractors and Suppliers.
As a consequence of the relationships between customers and suppliers as discussed it can be concluded that the principal elements of controlling procurement through a quality management system are as follows:-

(i) Selection of potential suppliers and subcontractors (vendor and subcontractor assessment).
(ii) Evaluation of current suppliers and subcontractors.
(iii) Defining the requirements (eg. specification) from the supplier or subcontractor.

3.6.2 Supplier and Subcontractor Assessment

In construction contracts it is the main contractor who is responsible for ensuring that materials and the work of subcontractors conform to the specification set by the client. Therefore a responsibility is placed onto the main contractor to check before employing subcontractors or purchasing materials from suppliers that they are able to supply the work or product required to specification, and on time. When operating a formal quality management system a procedure must be in place which defines the process of evaluating suppliers and subcontractors.

Where a supplier or subcontractor has not been used before the contractor can make an assessment in one or more of the following ways:-

(i) Assessment Questionnaire. The following areas should be covered:-
  - Company address and telephone number.
  - The quality system in operation.
  - Third party certification.
  - Plans for introducing a quality system.
  - Services provided.
  - Materials stocked.
  - Delivery period.
  - Suitable references for subcontractors.
  - Geographical region covered.
  - The quality representative's name.

In addition to the above, it may be appropriate to request copies of quality documentation such as the quality policy or quality manual. Ashford suggests that a Quality System Questionnaire should be specific to quality and would act as a source of preliminary information before an audit of the supplier's or subcontractor's organization was carried out (55). He suggests the main part of the questionnaire should ask the following questions:-

- Does your organization have a documented quality system? If yes, state to which Standard it relates.
- Does your organization have a Quality Manual? If yes please attach a copy of the contents page.
Does your organization have other manuals or procedures which relate to the control exercised over its quality management activities? If yes, state titles.

Does your organization have a person appointed as "Quality Manager"? If yes, please state his name, functional title and to whom in the organization he reports.

Does your organization have a current formal approval or registration in respect of its quality system to a national or industry sector scheme? If yes, give details with Approval/Registration Number and effective date.

Has your organization received any quality system audits by major companies within the last twelve months? If yes, give brief details and dates.

(ii) Assessments. These are carried out by purchasers and are also referred to as second party audits. The FCEC suggests that for a materials producer the evaluation procedure could include an inspection of the manufacturing facility and process and quality control facilities, an audit of the organization's existing quality system (if implemented) and an inspection of reports of the production of similar products in the recent past (58).

The same evaluation procedure can be used with subcontractors, however research suggests that few of the smaller subcontractors (eg. self-employed tradesmen) operate formal procedures. It is common in these instances to request references from clients or main contractors of recently completed contracts where the subcontractor under assessment has worked.

In cases where a supplier operates complex plant or equipment it can be necessary, if the firm is unknown, to carry out an assessment in four individual parts. Stebbing suggests that these should include engineering, quality, economics/schedule and financial stability. These are defined as follows (53):-

(1) Engineering: an evaluation of the organization's manufacturing facilities should be carried out to verify whether the capability to manufacture or supply the materials to the specification exists. It is also relevant to analyse recently completed contracts of comparable size in order to confirm the supplier's capabilities.

This form of assessment should be carried out by qualified engineers who are familiar with the production activities.
(ii) Quality: the potential supplier's quality system should be assessed. This should be documented in a formal manner and the assessment would aim to verify, or otherwise, that the quality system is operating effectively.

(iii) Economics/schedule: analysis should be made of the organization's prices and delivery record.

(iv) Financial stability: where high value and long term contracts are concerned an evaluation of the organization's financial stability is of value. This can be done by examining any available published accounts or by obtaining a report from an accredited agency.

This section has highlighted the methods available for assessing either a supplier or a subcontractor under consideration for use. The methods available require a degree of mutual cooperation between the parties concerned, and this condition can be enhanced between organizations which formally operate quality systems.

3.6.3 Supplier and Subcontractor Evaluation

Whereas assessment procedures are implemented where suppliers are under consideration and have not been used previously, evaluation procedures operate to monitor the performance of suppliers and subcontractors already in use.

As a requirement under BS 5750 it is the responsibility of the purchaser to ensure that his suppliers and subcontractors meet satisfactory quality standards. Such standards can be defined under the following headings:

(i) Quality of product or service.
(ii) Delivery time or lead time.
(iii) Price.
(iv) Attitude towards customer liaison.
(v) Contractual awareness.
(vi) Attitude towards safety.
(vii) Time keeping.
(viii) Ability to meet programme.

The above list can be added to for specific evaluation purposes, however, it does provide a basis for the evaluation to take place. This process should provide actual data regarding the performance of the supplier or subcontractor, and if monitored over a period should indicate the ability of the organization in question.
The evaluation headings referred to suggest that the individual line or contracts manager would be in the best position to assess the performance level of the supplier or subcontractor. This is because the data should indicate the actual performance achieved and the criteria for assessing this performance must be defined as part of the quality system. By implementing a standard set of performance measurement criteria it should be possible to compare the performance of suppliers and subcontractors who have been used by different managers in different areas of a company.

Few texts on the subject of quality management discuss the actual subject of on-going performance measurement as suggested in the previous paragraph. However Lock and Smith discuss the concept of vendor rating, and they suggest that the vendor qualification process will include the acquisition by the purchaser of proof that the vendor can conduct his business in a professional manner and that his product is of a satisfactory quality (49). They go on to suggest that a company should keep historic records of the performance of each of his suppliers and subcontractors (referred to as vendors) for each type of goods, and this should give the purchaser a choice of vendors about whom he knows a satisfactory amount of information. As a result of the operation of such a system the need for auditing a vendor's organization will become of less importance as performance is monitored.

3.6.4 Defining Requirements

BS 5750 states that purchasing documents shall contain data clearly describing the product ordered, including, where applicable (56):

(i) The type, class, style, grade or other precise identification.

(ii) The title or other positive identification, and applicable issue of specifications, drawings, process requirements, inspection instructions and other relevant technical data, including requirements for approval or qualification of product, procedures, process equipment and personnel.

(iii) The title, number and issue of the quality system International Standard to be applied to the product.

Additionally the supplier shall review and approve purchasing documents for adequacy of specified requirements prior to release.
The statement from the British Standard suggests that a formalized procedure should be introduced to review and approve the adequacy of purchase orders. Procedures should also be in place to define the system of appointing subcontractors.

Purchasing documents should also describe clearly the materials or work that is required, and in the case of materials a relevant standard should ideally be stated. Subcontract orders should define a relevant specification for the work. Copies of purchase orders should be kept by the relevant personnel and referred to when materials are delivered in order to ensure that the materials conform to the purchase order.

Figure 14 below illustrates a possible purchase order flowchart which encompasses the areas discussed.

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**Figure 14. Purchase Order Flowchart.**
When discussing the control of purchased product and services, the Department of Trade and Industry (dti) state the following (64):—

'Nothing is more aggravating to the quality conscious manufacturer than the failure of bought-in product. In the course of assuring yourself that you have selected satisfactory subcontractors, you should exercise control — in writing — of purchased product and services, purchasing data, inspection and verification of purchased product and the quality system to be applied, as appropriate, to your suppliers'.

This statement highlights the importance of confirming purchasing requirements in writing, together with any testing or inspection requirements carried out on delivery. Clearly this statement refers to a manufacturer, however it is equally applicable to a contracting organization which has similar purchasing requirements, and may have a more difficult environment in which to receive incoming materials and products (eg. a construction site as opposed to an enclosed stores facility).

One of the primary functions of the Purchase Order, based on the analysis discussed, is to define a procedure to assure the purchaser that the product specifications will be met. The following methods to provide this assurance can be considered:-

(i) The purchaser specifies that the supplier operates a QA system.

Where a product is being produced or constructed (eg. a nuclear power station), it would be a condition of contract for the contractor to comply with the QA specification, and to implement systems to do so.

(ii) The purchaser relies on the supplier's quality system.

A construction company which has certain measuring equipment serviced and checked by a laboratory, may require it to have its quality system assessed by the National Measurement Accreditation Service (NAMAS). The laboratory would be expected to have been granted registration in respect of the tests it carries out.

(iii) The purchaser relies on the supplier's reputation.

In many cases a contractor may employ a subcontractor on the basis of reputation and experience.
The subcontractor may be only one individual with a specialist skill whose business is too small to warrant the cost of certification to a particular sector quality scheme.

(iv) The purchaser may require the supplier to produce written evidence of material or product conformance.

In this case a certificate is the most likely requirement to confirm that quality standards have been met in the manufacturing process.

(v) The purchaser may inspect the supplier and even carry tests before agreeing to purchase the product.

Where critical items are required for a particular project (eg. pre-stressed concrete beams for a bridge) the contractor may visit the manufacturer to ensure that the manufacturing process is controlled, and that the required quality levels can be assured.
3.7 THIRD PARTY CERTIFICATION

3.7.1 Introduction

Certification is an assurance that a supplier meets all the requirements of a Quality Standard (eg. BS 5750). This means that the organization's quality system is a means of ensuring that its products or services meet the specifications specified for them (64).

Certification follows assessment of the systems in an organization in documentary form, and in actual use. This can be of value to management as a check that systems are operating in the intended manner. This can be particularly important in marketing where purchasers look for certification of quality systems to give them the assurance they need of the quality of the products or services they order.

Accreditation is awarded by the Secretary of State for the Department of Trade and Industry (dti) to a certification body confirming that it is competent to issue certificates within specified areas of industry. Accreditation may be for the issue of certificates relating to quality systems (eg. BS 5750) or for product conformity. In all cases the activities for which the certification body is accredited will be specified on its own certificate of accreditation.

Accreditation is awarded after assessment by the National Accreditation Council for Certification Bodies (NACCB), which is an independent body set up to advise the dti. The NACCB verifies that the certification body is independent, impartial, competent and knowledgeable in the fields for which it is accredited, and it will need to be satisfied that the body uses qualified and experienced staff who are thorough in their assessments. The logo below shown in figure 15 is known as the National Accreditation Mark, and companies certified by an accredited certification body are allowed to display the mark alongside their certification body's logo.

Figure 15. The National Accreditation Mark.
3.7.2 British Standards Institute

The British Standards Institute (BSI) provides industry with product certification and company quality assessment schemes. Certified products are marked with the famous BSI Kitemark which carries the assurance that products comply with national or international standards as well as confirming that BSI has independently verified the product (65).

The Kitemark is BSI's Registered Certification Trademark which companies can be licensed to use if BSI is satisfied that they produce goods consistently to national or international standards. In addition to the Kitemark there is the BSI Safety Mark which can be applied for when the standards cover specific safety requirements, and a special mark has been developed for electronic components certified under BS 9000. Companies may also claim to have been quality assessed by BSI to BS 5750 in respect of the products for which they are licensed.

BSI Registration and BSI Product Certification are of general application. In addition, to meet the particular quality needs of an industry or the requirements of a technological discipline, BSI designs and operates special systems having their own rules and scope of application. These are as follows:-

(i) Electronic Components. The BS 9000 System was established before BSI registration to BS 5750 become available. It is based on the same principles of quality system assessment and product certification. It is designed to meet the needs of the electronic components industry and has its own certification and capability assessment, and covers manufacturers, distributors and test houses.

(ii) Stockists. The Registered Stockist System is designed to ensure purchasers that supplies obtained from stockists maintain their original quality and conformity with specification.

(iii) Validation of Manufacturer's Data. Where the data issued about the performance of a company's products is of vital importance to designers, specifiers and users then this system provides BSI validation of its accuracy.

(iv) Service Industries. The 'Call Routing Apparatus Maintenance' scheme is an example of a service industry scheme. It provides protection for the national telephone network by ensuring that equipment connected to the network is properly maintained. Registration to BS 5750 is available to suppliers of maintenance services and to users of equipment carrying out their own maintenance.
BSI Quality Assurance has experience in designing and operating schemes to meet the needs of individual sectors of industry. It drafts and agrees the essential features with suppliers, purchasers and other interested parties and consultation takes place in committees operated under BSI's Quality Assurance Council. A scheme for a particular sector of industry can embrace several BSI certification systems, and this process usually produces Quality Assessment Guides which are then used in applying BS 5750 to the particular process or service under consideration. Financial support from the government can be available when developing and launching industry sector schemes.

A Quality Assessment Schedule to ISO 9002 (BS 5750 Part 2) defined as OAS/5010/332 has been developed for building contractors. This QAS was developed in conjunction with the following organizations (66):-

(i) Chartered Institute of Building.
(ii) Confederation of Construction Specialists.
(iii) Crest Homes PLC.
(iv) FCEC.
(v) Federation of Master Builders.
(vi) Institute of Clerks of Works of Great Britain.
(vii) Municipal Mutual Insurance Ltd.
(ix) Royal Institution of Chartered Surveyors.
(x) Simons Construction Group Ltd.
(xi) Sunley Estates Ltd.
(xii) The Timber and Brick Homes Consortium Ltd.

The QAS goes expands upon the following areas:­

(i) Specifications.
(ii) System Requirements. Quality System, quality policy, records, organization, quality planning, materials and site quality.
(iii) Information System.
(iv) Training.
(v) Complaints.

When a company's products carry the BSI Kitemark or its quality system is certified to BS 5750 its name appears in the BSI Buyers Guide, which is a reference book for purchasers in the UK and abroad. Approximately 3,000 companies are registered by BSI, and this includes 1,500 Kitemark licenses.
3.7.3 Lloyd's Register Quality Assurance

Lloyd's Register Quality Assurance (LRQA) started in 1985 after gaining accreditation as a certification body. LRQA is backed by Lloyd's Register which has helped to develop the principles of modern quality assurance (67).

LRQA was the first organization in the UK to become accredited to certify quality management systems in other organizations. This was in 1986 and the body is accredited to work in all areas of business from industrial manufacturing, to construction, to food preparation and packaging.

LRQA publish their route in certifying an organization's quality system. This is as follows (68):-

(i) Application for approval. A company completes an application form which LRQA evaluates and assesses whether it has the expertise to undertake the assessment.

(ii) Quotation of costs and contract. Upon receiving the application form LRQA compiles a quotation and a contract for proceeding with certification.

(iii) Scheduling of dates. LRQA's planning department arranges mutually agreeable dates for a documentation review and initial assessment. The documentation review generally takes place two months before the assessment in order to allow for any modifications.

(iv) Quality documentation review. The review takes place on the company's premises where the assessor ensures that all the documentation exists to meet BS 5750.

(v) The assessment. LRQA will carry out the assessment according to the part of BS 5750 initially agreed.

(vi) Reporting. If all aspects of the quality system do not satisfy the requirements of the Standard the assessor will detail the deficiencies on Non-Compliance Notes.

(vii) Approval. LRQA will issue a certificate of approval on completion of a satisfactory assessment. This assumes that any non-compliances raised have been acceptably dealt with. The certificate details the scope of approval and is valid for three years subject to satisfactory maintenance of the quality system.
(viii) Maintenance of approval. Once the system has been approved it has to be maintained to the agreed Standard. To ensure this LRQA visits the company at approximately six monthly intervals.

(ix) Triennials. Every three years the company's quality system is reviewed in its entirety to verify that the procedures continue to be implemented adequately and in accordance with the approved Standards. The extent of this review depends on the company's demonstrated ability to maintain its own system, as recorded at previous surveillance visits. A successful review results in the issue of a new certificate for a further three year period.

3.7.4 SGS Yarsley Quality Assured Firms

Like BSI and LRQA, SGS Yarsley is an accredited body for certifying organizations to BS 5750. It is part of the Societe Generale de Surveillance Group (SGS). When applying for an assessment by SGS Yarsley the body pledges to provide the following service (69):-

(i) To process the assessment within ten weeks.

(ii) To appoint an assessor to be responsible for the assessment, the first part of which involves a documentation review.

(iii) To organize a visit to the company's premises to check that all personnel are aware of their individual responsibilities and are following company procedures.

(iv) To issue a Certificate of Registration and carry out twice yearly surveillance visits over the three year certification period, to ensure continued compliance. If the assessor is not satisfied that the company's quality system does not comply with the Standard he will raise a Corrective Action Request and delay confirmation of registration until the non-compliance has been corrected.

3.7.5 Other Certification Bodies

There are a number of certification bodies which certify companies to BS 5750 eg. Central Certification Service (CCS). There are also a number of bodies which specialize in specific sectors of industry and provide quality assurance for specific products eg. (70):-

(i) UK Certification Authority for Reinforcing Steels (CARES).

(ii) Quality Scheme for Ready-Mixed Concrete (QSRMC).
3.7.6 Costs of Certification

For an organization to obtain third party certification via one of the bodies discussed in this section the costs vary considerably.

BSI charges an initial application fee for the whole organization plus additional assessment fees depending on the structure and the number of employees. For example, a company with a small number of employees (e.g. fifty) and with one office will pay substantially lower fees than for a company employing hundreds of people with several operating areas. For a company employing 120 people in five separate offices the application fee will be approximately £1,000.00 and the total assessment fee will be approximately £11,000.00. Annual certification fees would then be charged at approximately £1,100.00 (71). BSI does not confirm the actual surveillance fees necessary to maintain certification, and where such fees amount to £300.00 per assessor per day, substantial costs can be incurred.

LROA again charge fees which depend on the size and structure of the organization. For a company of the proportions discussed above LROA would charge an application fee of approximately £530.00 and an overall assessment fee of £11,000.00. Annual certification fees would then be charged, and these are not clearly defined other than a statement that approximately six days per year would be required for surveillance (72).

SGS Yarsley produce a fully inclusive quotation for certification costs for an organization based on the completion of a standard questionnaire. The fees are based on the three year certification period and include the application fee, the assessment fee and the surveillance fee with no additional or undefined costs. For a company of the size already discussed the application fee would be approximately £530.00, the assessment fee £3,550.00 and the surveillance fee £1,300.00 for years one and two and £650.00 for year three (73). In order to assist with the organization's cash flow, SGS Yarsley allow the certification fees to be spread more evenly over the three year period, for example in the above case the fees would be approximately £3,000.00 in year one, followed by £2,500.00 in years two and three.
3.8 QUALITY COSTING

3.8.1 Introduction

Allan and Asher define quality costs in the following ways (74):-

(i) Quality costs are the costs associated with the making of defective products or providing defective service.

(ii) The expenditure incurred on or attributable to the establishment control of a given standard of quality products.

(iii) The quality cost of a company is the difference between the actual cost to the company of making and selling its products, less the cost to the company if there were no possibility of failure during manufacture.

Lock and Smith go on to suggest that quality can be described as one of two types (49):-

(i) Operating quality costs. These include prevention costs, appraisal costs and failure costs.

(ii) External assurance quality costs. These are costs relating to procedures, demonstration tests and assessments (eg. the cost of testing for safety standards).

A literature survey suggests that as prevention costs rise so failure costs decline, resulting in a point where both costs are equal (known as the break even point). This concept is illustrated in figure 16, and it can be seen that ultimately if this cost trend is true then prevention costs can be greater than failure costs.

---

**Figure 16. Prevention and Failure Cost Curves.**
3.8.2 Prevention Costs

Prevention costs can include the following areas:-

(i) Design reviews. These are reviews of engineering designs at points in the development of a product before the release of final engineering drawings. These reviews help in ensuring conformance to specifications.

(ii) Quality training. Staff employed within the quality department or section of the organization need to have an understanding of quality control, quality assurance and quality management.

(iii) Supplier and subcontractor assessment. This is the cost of evaluation, surveillance, meetings, operating assessment questionnaires and appraisals and audits.

(iv) Audits. Internal audits carried out on the company's own premises or at a supplier's premises are usually carried out by the company's own employees.

(v) Installation prevention activities. These can include any activities which have to be carried out to meet any contract conditions. For example, the availability of certain test equipment, manuals, drawings or plans.

(vi) Quality engineering. This includes the preparation of quality documentation relating to the product or service (eg. quality plans, works procedures and checklists).

3.8.3 Appraisal Costs

Appraisal costs can include the following areas:-

(i) Test and inspection. During production the product should be tested and inspected against specifications using the relevant documentation (eg. quality plans).

(ii) Maintenance and calibration. These are costs required to ensure that measuring and inspection equipment is calibrated and serviced.

(iii) Test equipment depreciation. Measuring and test equipment can require significant capital investment and will depreciate over accounting periods.

(iv) Installation testing. The installation and commissioning of products must be carried out by suitably qualified personnel.
3.8.4 Failure Costs

Failure costs can include the following areas:-

(i) Design changes. Where defects are found in the product a design change may be necessary. Some or all of the activities detailed under prevention costs will need to be addressed as the defect is traced through the engineering and production process.

(ii) Material rejects. Defective items purchased from suppliers will need to be either exchanged, reworked, worked around or written off.

(iii) Rework. Where rework is incurred testing may be needed, and also remaining production may be hindered or programmes adjusted.

(iv) Warranty. Any failures in the product occurring during the warranty period must be rectified.

(v) Commissioning failures. Any failures found during commissioning the product or during final inspection (snag) may result in deadlines not being met and additional rework costs.

3.8.5 External Quality Assurance Costs

Lock and Smith argue that external quality assurance costs 'should be lower than operating quality costs since most quality costs will have been incurred before the involvement of external quality assurance personnel' (49).

External quality assurance can involve an independent testing organization which tests the product against its specifications (eg. Trading Standards as part of Local Authorities). Also this area could involve the use of an independent assessment organization such as a third party certification body.

The emphasis with external quality assurance according to most texts studied is that the organization must demonstrate that it has the capabilities for supplying products and services which meet the required quality standards, as defined in specifications or required by the customer.

However Feigenbaum suggests that external quality costs include the costs of unsatisfactory quality outside the company, such as product performance failures and customer complaints (51). He suggests that the costs of external failure can include the following:-
(i) Complaints in warranty. This can represent all costs of complaints within warranty requiring investigation, repair or replacement.

(ii) Complaints out of warranty. This can include all accepted costs for accepted complaints after the warranty has expired.

(iii) Product service. This includes all costs directly related to correcting problems or correction of defects. This does not include installation service or maintenance.

(iv) Product liability. This represents costs incurred as a result of quality failures.

(v) Product recall. This includes costs incurred as a result of product or component recall.
CHAPTER SUMMARY

This chapter has explained the subject of quality management by initially defining three key areas of the subject: quality control, quality assurance and total quality management. British Standard 5750 encompasses both quality control and quality assurance in its framework, and is used by many organizations as the basis for moving on to total quality management (54). Consequently BS 5750 was also discussed at the beginning of the chapter.

The following sections of the chapter discussed quality management with regard to its operation in practice, and therefore drew upon the implementation of BS 5750 and quality management principles in a wider context. The literature survey used as the basis for this study has covered a number of key textbooks, dti publications, industry publications, course notes and certification body literature. This, together with information drawn from BS 5750, has ensured that the information is current and relevant to industrial practice.

Chapter two of this thesis discussed human resource management which relates closely to total quality management because both areas require the effective management of people. Chapter two discusses the detail of human resource management and this chapter illustrates how its effective operation can assist in improving quality. This is most obviously seen in the context of training, where BS 5750 requires that organizations should operate a formal training procedure.
4. THE DEVELOPMENT OF HUMAN RESOURCE MANAGEMENT IN A CONTRACTING ORGANIZATION

4.1 INTRODUCTION

The contracting organization, as described in chapter one, set out to develop and improve its human resource management (HRM) systems on the basis of the introduction of quality management. This development was initiated through the implementation of BS 5750, where there is a requirement for an organization to introduce and maintain training procedures for its employees. Additionally the Company experienced difficulty in developing the culture of the organization to one where quality was of prime consideration, and the directors considered that by improving the HRM systems the attitude of the employees would be more positive towards accepting organizational change.

This chapter describes how the current HRM system was reviewed with reference to current practice and theory as discussed in chapter two. This information was researched by carrying out structured interviews with four departmental managers and one director. Additionally more informal discussions were held with ten staff, covering site and administrative functions, in order to gain their perspective of the current HRM system. A detailed review of all Company documentation in relation to HRM was carried out to supplement this study, and this was compared with the theoretical models discussed in chapter two. Before any Company information was included in this thesis it was cross-checked with relevant staff to ensure its validity and accuracy.

On the basis of the review described, development of the Company's HRM system was carried out by the author, and recommendations for key improvements of the system were made to the directors. This work formed the basis of a 'model' HRM system, which is described in this chapter on a 'task by task' basis, beginning with recruitment.
4.2 RECRUITMENT

4.2.1 Job Descriptions

The Company had not produced any form of job description for any of its employees. Due to an informal method of HRM, the recruitment process was never formally controlled or monitored.

The need to produce job descriptions arose initially from the development of a procedures manual. As discussed in section 3.5.4, the procedures manual is unique to the organization and should define the tasks assigned to employees. As the Company was operating through five different area offices, the duties and responsibilities of staff varied in each office, however, in order to simplify the quality system a common procedures manual was produced for the whole Company. As a consequence of this policy it became necessary to define who was responsible in each office for operating the Company procedures, and therefore the Institute of Quality Assurance recommended that job descriptions should be produced for each employee (75).

The job descriptions were developed in liaison with all employees whose tasks were included in the procedures manual. Where more than one employee existed with the same job title (e.g. Area Manager or Estimator), all draft job descriptions were evaluated to produce one common job description. An example job description for an Area Manager is shown in figure 17.

As figure 17 illustrates the job description includes the job title, the responsibilities of the individual and the main activities (duties) of the post, as defined in section 2.2.2. It was common for individuals producing their own job descriptions to become confused with the differences between the terms 'responsibilities' and 'duties', however this problem was significantly reduced when 'duties' was replaced with 'activities'. It was also useful in this exercise to ask an office secretary to produce a job description of her role which was then used as an example for other employees to complete the exercise.

The production of job descriptions was not originally seen by the Company directors and managers as an exercise in HRM, since it was being carried out as part of the development of the quality system.
Figure 17. An Example of a Job Description.

JOB DESCRIPTION FOR AREA MANAGERS

JOB TITLE: AREA MANAGER
DEPARTMENT/AREA: ALL AREAS

RESPONSIBILITIES:-

1. To liaise with existing and potential clients and gain their confidence.
2. To maintain and improve the Company's position in its chosen market.
3. To achieve budgeted targets by the control of expenditure and the attainment of profitability.
4. To monitor and forecast financial results against budget and subsequent reporting of such matters.
5. To ensure the implementation of Company Policies inclusive of health and safety, quality, and training.
6. To ensure discipline and provide direction to all staff, encouraging commitment and assessing promotion prospects.
7. To ensure the quality and standards of workmanship are maintained to a high level.

DUTIES (ACTIVITIES):-

1. Programming of operations and staff movements.
2. Produce and present the annual budget.
3. Maintain a marketing drive to ensure tender opportunities.
5. To adjudicate at tender stage.
6. Organize contract start-ups ensuring smooth transition from tender to contract.
7. Represent the Company.
8. Monitor the submission of valuations and accounts.
9. Provide communication on Company directives to staff.
10. Monitor staff training.
11. Monitor payments to ensure credit control.
12. Liaise with all service departments and ensure they provide an appropriate level of support.
13. Interview any potential employees.
14. Arbitrate with any disputes and take any disciplinary action as required.
15. Monitor site performance and progress by regular visits.
17. Delegate duties onto other members of staff and monitor same.
18. Undertake any management task assigned by senior management.

ACCOUNTABLE TO: Joint Managing Director (Operations)
ACCOUNTABLE FOR: Site Agents, Engineers, Buyer, Estimator, Quantity Surveyor & Secretary.
Figure 17 illustrates that the 'responsibility' section of the job description provides a very general description of the main purpose of the job, whilst the 'activities' section expands the main purpose into more detail. This approach satisfies the ACAS recommendations for the production of job descriptions as described in section 2.2.2 (7).

The author recommends that job descriptions should be maintained for all staff positions within the Company. These job descriptions should be used in the recruitment process, and also as the basis for defining responsibilities within the Company Procedures Manual.

4.2.2 Personnel Specifications

The Company had never produced personnel specifications for any position. Based on the discussion in section 2.2.3, the personnel specification is designed to effectively 'dovetail' with the job description since the job description defines the actual purpose and tasks of the role, and the personnel specification defines the requirements of the individual to fill that role.

Whereas the job description is used at the recruitment stage, it is also of key importance within the quality system itself, as described in the previous section. The personnel specification, however, is primarily used in the recruitment process where it is a basis for matching applicants against requirements.

Based on the position of 'Area Manager' discussed in section 4.2.1, a personnel specification could be developed based on Rodger's Seven-Point Plan (8), or Munroe Fraser's Five-fold Grading System (9). Examples of each are shown in figures 18 and 19 respectively.

Figure 18. An Area Manager Personnel Specification Based on Rodger's Seven-Point Plan.

1. Physical Make-Up:
   Good health, with no serious ailments suffered in the last two years.
   Smart appearance and a clear speaker.

2. Attainments:
   Minimum of five GCE's (of which two must be at 'A' level), or equivalent.
   Minimum of HND in Civil Engineering.
   Ten years experience of managing contracts over £1 million pounds in value.
3. General Intelligence:

Of good demonstrable intelligence indicated through conversation and interests.

4. Special Aptitudes:

Fast and accurate assimilation and understanding of complex civil engineering drawings.
Ability to understand financial data in the form of operating statements, balance sheets and profit and loss accounts.

5. Interests:

Demonstration of interests in practical and constructional activities.
Demonstration of active/outdoor sports interests.

6. Disposition:

Confident appearance and manner combined with a dependable and self-reliable nature.
A clear thinker who listens to others of a more senior as well as junior position.
A stable personality who behaves calmly and thinks clearly under pressure.

7. Circumstances:

An ability to work unsocial hours and travel up to 100 miles to construction sites.

Figure 19. An Area Manager Personnel Specification Based on Rodger's Five-fold Grading System.

1. Impact on Others:

Confident and smart appearance and manner combined with a dependable and self-reliable nature.
A clear speaker.

2. Acquired Qualifications:

Minimum of five GCE's (of which two must be at 'A' level), or equivalent.
Minimum of HND in Civil Engineering.
Ten years experience of managing contracts over £1 million pounds in value.

3. Innate Abilities:

Fast and accurate assimilation and understanding of complex civil engineering drawings.
Ability to understand financial data in the form of operating statements, balance sheets and profit and loss accounts.
4. Motivation:

A demonstrable record of achievement in career progression and project management.

5. Adjustment:

A clear thinker who listens to others of a more senior as well as junior position.
A stable personality who behaves calmly and thinks clearly under pressure.

The previous examples of personnel specifications illustrate the similarity between the two in terms of the information generated. Figure 18 breaks the specification down into more categories which assists in building-up the details, however figure 19 produces a similar result, just omitting any reference to 'circumstances'.

It is clear from this discussion that both the job description and personnel specification compliment one another in the recruitment process, and provide a more formalised approach to this key HRM activity.

The writer recommends that personnel specifications for all staff positions within the Company are produced and maintained. This process could be completed at the recruitment stage for each post, until a complete set of personnel specifications is produced.

4.2.3 Recruitment Methods

The Company has had a policy of internal promotion, with the use of recruitment to fill the resultant vacancy or vacancies. For example a restructuring of the Company during the period of research resulted in the introduction of a new layer of management between the directors and Area Managers as shown in figure 20:-

Figure 20. The New Layer of Management
As a result of the restructuring described, two Area Managers were promoted to fill the new posts of Northern and Southern Regional Manager. This resulted in two vacancies for Area Managers, one of which was filled by an internal promotion and the other by recruitment.

The Company has typically used recruitment agencies for such positions, however for more junior staffing positions an advertisement within a trade journal or local newspaper is more common. The specific recruitment method is decided by the individual manager, and this flexibility extends to the wording of advertisements and recruitment information.

Two typical recruitment agencies used by the Company state their terms and conditions of business as follows:

1. QUEST RECRUITMENT (76)

   (i) Costs: salary up to £3,999: fee 10%
       salary £4,000 to £14,999: fee 12%
       salary £15,000 to £19,999: fee 15%
       salary over £20,000: fee 17%

       Fees charged as a percentage of salary, and exclude VAT.

   (ii) End of Engagement:

       If the engagement of the applicant ends within three months of his engagement then the following refund fees will be paid:-

       Within 1st calendar month: free replacement or 50% refund.
       Within 2nd calendar month: 25% refund.
       Within 3rd calendar month: 10% refund.

2. JOHNSON UNDERWOOD (77)

   (i) Costs: salary up to £6,499: fee 10%
       salary £6,500 to £8,499: fee 12.5%
       salary £8,500 to £14,999: fee 14%
       salary £15,000 to £19,999: fee 15%
       salary £20,000 to £24,999: fee 17%
       salary £25,000 and above: fee 20%

       Fees charged as a percentage of salary, and exclude VAT.

   (ii) End of Engagement: no data provided.
The Kings Langley area of the Company has a close relationship with Hatfield Polytechnic, and it is common for a sandwich student to be either sponsored or employed solely for the sandwich year. The sponsored student would be expected to work for the Company during holidays and an offer of full-time employment would be made to the student before completion of his course. The Northampton area of the Company has a similar relationship with Nottingham Polytechnic. There is no common approach to graduate recruitment across the Company, instead each Area Manager is left to develop his own policy.

The recruitment methods implemented throughout the organization are clearly dependent upon the approach and understanding of the individual manager, and there is a resultant variation in the staffing structure and culture throughout the Company.

The author recommends that a common approach to recruitment is adopted throughout the organization, in order to maintain a consistent approach and to ensure that recruitment takes place by the most effective means. Management training to address this issue would assist in the introduction of a coordinated recruitment policy.

4.2.4 Job Advertisements

Figures 21 and 22 as follows show the contents of two actual Job advertisements placed in local newspapers.

Figure 21. Job Advertisement for a 'Data Input Clerk'.

<table>
<thead>
<tr>
<th>COMPANY NAME AND LOGO</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATA INPUT CLERK</td>
</tr>
</tbody>
</table>

Responsibilities of this post include the VDU input of Materials Received Sheets and Purchase Invoices, matching invoices with orders and general filing.

Applicants should ideally have VDU input experience.

In return we offer an attractive salary, together with private health scheme, private health insurance, pension scheme and profit share scheme.

Please apply in writing to the Financial Controller, Company name and address.
As discussed in section 2.2.5, Tyson and York (6) suggest that a job advertisement should contain key information derived from the job description and personnel specification. This method of developing the advertisements shown was not used since both the job descriptions and personnel specifications had not been produced, and consequently the advertisements do not include the following information:–

(i) A detailed description of qualifications and experience, particularly with reference to the 'Accounts Clerk/Trainee Computer Operator'.

(ii) Basic salary.

(iii) The method of application in terms of a curriculum vitae or information required.

(iv) Opportunities for personal development.

By omitting the information listed above, it is possible that the most appropriate candidates may not be attracted to apply for the vacancies, and as a consequence the most suitable staff may not always be recruited. Consequently the writer proposes that standard job advertisements should be introduced into the recruitment process. The standardization should cover layout and key job details as discussed.
4.2.5 Application Forms

The Company has produced its own application form which includes spaces for the following information:

(i) Post applied for.
(ii) Full name.
(iii) Address.
(iv) Private and business telephone numbers.
(v) Date of birth.
(vi) Age.
(vii) Nationality.
(viii) Description of physical disabilities.
(ix) Details of driving licence (ie. details of any convictions).
(x) Details of any criminal offences convicted for under the rehabilitation of Offenders Act 1974.
(xi) Details of previous employment with the Company.
(xii) Date available for work.
(xiii) Details of any employers who should not be approached for references.
(xiv) School education including examination results.
(xv) Higher and further education including courses and results.
(xvi) Professional membership and qualifications.
(xvii) Personal references (two).
(xviii) Employment history including name of employer, address, dates of employment, type of business, job title and details of responsibilities, starting salary, leaving salary and reason for leaving.
(xix) Skills and experience gained through employment, activities and interests.
(xx) Interests, including hobbies, sports and pastimes.

The list above illustrates that the Company's standard application form is comprehensive, however it does not include questions on marital status or next of kin, and there is no space for the applicant to note down the source of information for the vacancy. The author therefore recommends that the deficiencies highlighted are corrected.
4.3 SELECTION

4.3.1 Planning Selection

The current HRM system operated by the Company does not formally require that applicants submit a curriculum vitae or complete an application form before the interview. Personnel specifications are not produced, and as a consequence information on the candidate cannot be compared formally with the Company's requirements.

As a result of this informal method of planning selection, an objective shortlist cannot be compiled, instead a subjective decision must be made of the candidates chosen for interview.

For more senior staff (eg. Area Managers) the directors made a decision to employ a more formal selection process, carried out with the assistance of an external recruitment consultant. As a consequence of this policy, there are essentially two recruitment and selection systems in existence within the organization and these are shown in figures 23 and 24 as follows:-

Figure 23. The Recruitment and Selection System for Junior Staff.
The figures above indicate the absence within the current HRM system of any reference to job descriptions or personnel specifications, which according to the research carried out is a fundamental element of the recruitment and selection process in order for the person to match the job. If the current systems were to be revised in line with the practice described the process flowchart would be as shown in figure 25.
The writer proposes that a standard recruitment and selection process should be adopted within the organization. This process should be based upon the flowchart shown in figure 25, and would provide a clear method for all managers involved in the recruitment and selection activities to adopt.
4.3.2 Selection Techniques

The Company principally uses the traditional method of selection - the interview. The main concern with the interviewing process, as investigated by Scott (13), is the subjectivity involved in actually selecting an appropriate candidate to fill the vacancy.

The usual process involves the departmental manager (e.g. Area Manager) interviewing the candidate, however an additional member of staff may also attend the interview if he or she will be the potential recruit's supervisor.

The difficulty in achieving objective information from the interview makes the process of planning suitable questions of prime importance, however the following points could cause problems in this area for the Company:-

(i) The application form is not always completed by the applicant before the interview.
(ii) Job descriptions and personnel specifications are not actively used.
(iii) No formal interview planning takes place by the interviewers to plan key questions.
(iv) Staff required to carry out interviewing have not received any formal interview training.

As Hollier states 'a good interviewer will control an interview' (15), and from this study as discussed in section 2.3.3, the questions asked play a key part in maintaining this control. This would suggest that the interview must be planned and this should include consideration of the following areas:-

(i) The main areas of questioning. This can be centred around the candidate's work experience or training, or questions regarding the vacancy may be asked. This depends upon the candidate's background and the particular vacancy which is available.

(ii) Timing. Consideration should be given to the time allowed for the interview, and this will then dictate the time allowed for asking specific questions and probing the candidate on points of interest or importance.

(iii) Information for the candidate. The interview is also a time for the interviewee to ask questions about the organization and the role, and time should be allowed for this transfer of information.
To assist in the planning of an interview, the interviewer would therefore gain from comparing the applicant's details (from the CV or application form) with the vacancy (from the job description), and figure 26 below is a proposed 'Interview Planning and Record Form' prepared by the author.

<table>
<thead>
<tr>
<th>INTERVIEW PLANNING &amp; RECORD FORM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Areas for Questioning:--</td>
</tr>
<tr>
<td>(Remember HOW, WHAT, WHY)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| POINTS TO TELL CANDIDATE:--   |
| (Eg. Tasks, hours, car, salary, fringe benefits, training etc.) |

| ADDITIONAL NOTES:--           |
| (Eg. Points to follow-up, promises made etc.) |

Figure 26. A Suggested Interview Planning and Record Form.
The notes made on the form shown in figure 26 would provide the interviewer or interviewers with information to assist in the evaluation of each candidate after the interviewing stage of the selection process was complete. This would provide a basis for more objective decision making from information generated from the interviews, and should remove some of the element of selection by 'gut reaction'.

The author recommends that all interviews within the Company are planned and conducted in a structured manner with the aid of an interview planning and record form as suggested in figure 26. Interview training should be provided for relevant managers in order to support any improvements.

4.3.3 The Offer of Employment

Once the selection process has been completed the Company formally writes to all candidates informing them of the outcome. Figure 27 is an example of an actual offer letter sent to the successful candidate for the post of 'Engineer'.

Dear Mr. Smith,

ENGINEER

Further to your recent interview at our Kings Langley office, we are pleased to be able to offer you a position within our Area Operations Department as an Engineer. We would be grateful if you would advise us formally of your decision as soon as possible. Your employment would be on the following terms:-

Salary £X,000 per annum, paid monthly direct into your bank account. Your salary is subject to a review on 31 August each year.

You will also be entitled to a Grade III company car, holidays, sick pay, profit share and superannuation all as described in our Company Handbook, being sent under separate cover. Termination of employment will be one month's notice by either party.

We hope you will accept this offer and that it will lead to you enjoying a long and rewarding career with us.

Your sincerely
for the Construction Company Limited

Area Manager

Figure 27. A Company Employment Offer Letter.
With regard to Graham and Bennett's recommendations on the contents of the offer letter (28) as discussed in section 2.3.5, the letter shown in figure 27 compares as follows:

(i) The remuneration is stated as recommended.

(ii) The position is named as recommended.

(iii) The essential conditions of employment are referred to, however they are not defined specifically. The Company Staff Handbook (incorrectly referred to in the letter as the Company Handbook) contains the specific information and this was sent separately. Graham and Bennett's recommendation was therefore met.

(iv) No requirements for the confirmation of this position were required by the Company, and consequently none were stated.

(v) The next stage for the process is defined in the letter by stating that 'we would be grateful if you would inform us formally of your decision as soon as possible', however a definite date is not stated as recommended.

The writer proposes that a standard 'Offer of Employment' letter is developed for use by the Company in order to ensure that the deficiencies discussed above are corrected. The letter should also be sent centrally from the Company to ensure that the process is fully controlled and a standard method of offering employment is implemented.
4.4 INDUCTION

4.4.1 Induction Policy

The Company's induction policy is stated in the Staff Handbook as part of the overall Training Policy. The induction policy is stated as follows (78):

'The induction process will comprise a programme, followed by a three monthly and six monthly review. The target level of training during the six monthly induction period will be two working days or its equivalent.'

The Training Policy goes on to state that the induction training will be considered completed after six months, after which point individuals will be transferred to career training schemes based on their specializations.

The author recommends that the Training policy is implemented as stated in order to provide the required training, including induction, for all staff.

4.4.2 Induction Programme

In 1990 the Company appointed an Area Manager to develop an Induction Manual which contains the following sections:

(i) The Company Group History. This describes the history of the Company leading through to how it arrived in its present form.

(ii) The Company Today. This describes the current structure and operations.

(iii) Induction Process. This defines the induction process in the following sections:

(1) Interview with Training Manager. Within two weeks of the new employee starting work, the Training Manager will interview the employee to identify areas of potential training needs. The intention here is to identify short term, two year and five year training goals which will be formally recorded.

(2) Discussion Between Training Manager and Departmental Manager. This is planned to take place before the interview described above, where strengths and weaknesses of the employee can be discussed. This is formally recorded.

(3) Twelve Month Training Plan. This plan will be produced on the basis of the interview, with the aim of providing two working days per year training plus in-house training.
(4) Training Review. At the completion of the three and six month periods the employee's training will be reviewed and adjustments made where required.

(iv) Responsibilities. The following responsibilities in terms of training are defined for the following individuals:

(1) Training Manager.
(2) Departmental Manager.
(3) Employee.
(4) Directors.

(v) Career Training. This states that upon completion of the induction training staff will transfer to career training.

(vi) Operation and Control. This section suggests that a computerised database should be developed on which to store the training data. It is suggested that a database system is required for:

(1) Staff training record.
(2) Interview appraisal.
(3) Induction training programme.

(vii) Quality Management. This summarizes the Company's approach and commitment to Quality Management based on the principles of BS 5750.

The Induction Manual also contains the proposed training forms. These are as follows:

(i) Staff Training Record. This contains basic training information about the individual, including courses attended and the overall training plan.

(ii) Induction Process Record. This is essentially a checklist which is signed off as each element of the induction training is completed.

(iii) Induction Training Interview. This formally records the initial interview with the employee and the discussion with the Departmental Manager. The form requires comments under the following headings:

(1) Job description as understood by the employee.
(2) Strengths and weaknesses as seen by the employee.
(3) Career goals as seen by employee.
(4) Job description as understood by the manager.
(5) Strengths and weaknesses as seen by the manager.
(6) Career progression as seen by the manager.
When comparing the Induction Manual with suggested practice as described in section 2.4, the following conclusions can be drawn:—

(i) The manual defines procedures for establishing training needs at the induction stage as suggested, however it is ambitious to attempt to define an employee's five year training plan after only two weeks employment, as defined.

(ii) The manual presents information partly directed at new employees and partly directed at senior management as the basis for discussion and development (eg. the suggestion of a training database). As a result of this incompatible information, the manual is not in a suitable form for issue to staff as a working document.

(iii) There is no reference to work experience in terms of job variety and visits or attachments. This can provide a valid training experience as suggested by Tyson and York (6).

(iv) There is no reference to the social adaptation of the new employee. This element of the induction period is designed to settle the new employee into the working environment with a new set of colleagues and a different culture.

The writer recommends that the Induction Manual is reviewed and revised in order to address the negative points discussed above. The manual should then be implemented for use when inducting new staff into the Company.
Salaried staff in the Company are paid on a monthly basis. Overtime can be paid to site staff who may work at weekends, and the payments are made on the basis of the number of days worked overtime (not hours) and are at the standard rate (eg. a Site Engineer working for a Saturday and Sunday would be paid two days additional salary).

Managers within the Company responsible for a number of staff are given the opportunity at the annual salary review period (held during August every year, to be effective from 1 September) to recommend revised salaries for their staff. These recommendations are passed to the Directors who review all salaries across the Company, and on the basis of this review the recommendations for each individual are either agreed or adjusted. Managers can also recommend that employees' car grades are changed, and these recommendations are reviewed in a similar manner.

This procedure is not formally recorded, and as a result a degree of flexibility exists in its operation. There is also potential for interpretation of the procedure which may vary according to the manager concerned. Based on interviews with Company managers the following aims of salary administration, as stated in section 2.5.1, are satisfied as follows:-

(i) The flexibility of the salary structure and review procedure should enable suitable people to be attracted to the organization, since this system allows for salaries to be varied according to the individual's current remuneration.

(ii) Provided that employees' remunerations are improved in line with their expectations, suitable staff should be encouraged to remain in the Company's employment. The difficulty with unstructured systems however, is that improvements in remuneration may not always match expectations in certain cases, and may exceed them in others.

(iii) The system is designed to provide appropriate rewards for good performance and incentives for further improvements, however the lack of structure to the system could lead to the reverse result if rewards are not as great as expected.

(iv) Although the intention of this salary administration system is to provide fairness in setting pay levels, there would appear to be some variance in the levels of equity, since there is no formal evaluation of the job structure within the organization. This is discussed later in this chapter.
(v) The system is highly flexible and able to accommodate changes in the relative market rates for jobs of different skills. This is a characteristic of a relatively unstructured salary system.

(vi) The nature of the Company policy in terms of salary and remuneration management results in some confusion with staff over their potential salary progression. As a result staff understanding of the salary structure is minimal.

As stated by Braybrooke, the aims of salary policies and procedures are to minimise confusion and to maximise equity, simplicity and fairness (17). The example of the Company's informal system would indicate that most of the aims of a defined salary administration system are only partially satisfied at best.

External factors do have a bearing on determining salary levels. One current example is the effect of the recession which has resulted in salary levels being held at the same level, whilst annual inflation (based on the Retail Price Index) has risen by up to 10.9%.

The writer proposes that the salary policy is reviewed and revised by the Company directors in order to address the potential confusion within the current system, and ultimately to improve the equity within the organization.

4.5.2 Wage Administration

The civil engineering industry has formed an agreement between the Federation of Civil Engineering Contractors (FCEC) and the National Union of Enginenmen, Firemen, Mechanics and Electrical Workers, the Transport and General Workers' Union and the National Union of General and Municipal Workers; the agreement is known as the 'Working Rule Agreement' and defines the following (79):-

(i) Procedures for the settlement of disputes.

(ii) Rates of pay. These are defined for operatives and craftsmen and are broken down into three grades known as the London Super Grade (338.5p per hour, June 1990), the Liverpool Grade (338.5p per hour, June 1990) and Class 1 (338p per hour, June 1990).

(iii) Special Job Classification. Employers or operatives can request that under special circumstances the job can be treated as a special case, and this may result in increased earnings.

(iv) Bonus. It is open to the employer and the employee to agree bonus on output for any operations on a particular job.
(v) Rates for skill. These rates are payable in addition to the basic hourly rate, and are called the 'plus rates'. Examples of the qualifying skills are as follows:-

- Bar benders and reinforcement fixers.
- Concrete leveling or vibrating.
- Drilling and blasting.
- Formwork carpentry.
- Gas distribution.
- Maintenance or plant mechanical work.
- Crane operation.
- Dumper truck and excavator operating.
- Piling.
- Pipe joining.
- Scaffolding.
- Steelwork construction.
- Welding.

(vi) Annual holidays with pay. The paid holiday allowance is defined to include winter, Easter and summer holidays.

(vii) Overtime rates. Overtime rates are defined as follows:-

First 4 hours after normal working day paid at time and a half.
After the above period double time is paid.
Saturday: time and a half for first 4 hours or up to noon, thereafter double time including Sunday.

Rates are also defined for night work, tunneling work and shift work.

The Working Rule Agreement also defines conditions for termination of employment, travelling and emergency work, travelling and subsistence allowances (in relation to the distance travelled to work), tool allowances and welfare.

The Company generally exceeds the overall payment recommended by the Working Rule Agreement by five to ten percent. Each week the Site Agent completes a wage slip detailing the hours worked by the individual, including travelling allowances and bonus. The wage is then paid directly into the individual's bank or building society account by credit transfer.

This section highlights the formality of wage administration in comparison with salary administration. This situation has arisen due to the involvement of the respective trade unions with the FCEC, which essentially acts as a representative of the employers. Such a situation has not occurred with salaried personnel, and the procedures governing this part of the workforce are highly dependent upon the organization itself.
There is no specific need for modification of the wage administration system, and the writer proposes that the Company continues to comply with the Working Rule Agreement.

4.5.3 Job Evaluation

There is no formal job evaluation process carried out within the Company. For the purpose of this study however the writer has carried out an example job evaluation of the following positions within the organization:-

(i) Junior Engineer.
(ii) Foreman.
(iii) Engineer.
(iv) Site Agent.
(v) Senior Agent.
(vi) Contracts Manager.

This exercise was carried out using the non-analytical approach as discussed in section 2.5.4, and figure 28 below shows the result of the job ranking exercise.

![Job Ranking of Company Site Staff](image)

Figure 28. Job Ranking of Company Site Staff.
The previous example of job ranking illustrates its application in practice. The ranking of the positions shown was made straightforward due to the clear job titles held by the respective employees. A greater degree of subjectivity would arise when introducing office staff into the exercise, such as Secretaries, Estimators and the Financial Controller. The comparison of these jobs with site staff becomes less clear, since the responsibilities and activities of each position vary widely. An example of a job ranking exercise including all positions discussed is shown in figure 29 below.

**JOB DEFINED BY KEY**

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</table>

**KEY TO JOB**

A JUNIOR ENGINEER
B FOREMAN
C ENGINEER
D SITE AGENT
E SENIOR AGENT
F CONTRACTS MAN.
G SECRETARY
H ESTIMATOR
J FINANCIAL CONT.

<table>
<thead>
<tr>
<th>TOTAL SCORE</th>
<th>RANK</th>
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</thead>
<tbody>
<tr>
<td>15 11 11 15 11 8 6 4 1</td>
<td>1 2 6 1 2 3 4 5 6</td>
</tr>
</tbody>
</table>

**Figure 29.** Job Ranking of Company Site Staff and Administrative Staff.
The job ranking exercise illustrated in figure 29 produced the following results as shown in table 2.

<table>
<thead>
<tr>
<th>JOB RANK</th>
<th>JOB TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Financial Controller Contracts Manager</td>
</tr>
<tr>
<td>2</td>
<td>Estimator Senior Agent</td>
</tr>
<tr>
<td>3</td>
<td>Site Agent</td>
</tr>
<tr>
<td>4</td>
<td>Engineer</td>
</tr>
<tr>
<td>5</td>
<td>Foreman</td>
</tr>
<tr>
<td>6</td>
<td>Secretary Junior Engineer</td>
</tr>
</tbody>
</table>

Table 2. The Results of the Job Ranking Exercise.

If a formal job ranking exercise were to be carried out in the Company as a part of a formal HRM system, then clearly a degree of consultation with staff representatives and management would be required. This process would alleviate the inevitable variation in people's judgement in terms of assessing the relative responsibilities and value of a job; this was clearly highlighted in section 2.5.4 (table 1), and as a consequence the author recommends that such an exercise should be conducted as part of the development of an HRM system.

4.5.4 Pay Structure

The pay structure within the Company is highly flexible, and this section will discuss its relationship to job grades.

A formal definition of job grades is defined, however the grades are specifically related to the level of car issued to eligible staff. The grades are defined as follows (78):-

<table>
<thead>
<tr>
<th>GRADE</th>
<th>EXAMPLE OF CAR ALLOWANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Ford Fiesta 1.1 Popular</td>
</tr>
<tr>
<td>3A</td>
<td>Ford Escort 1.3L</td>
</tr>
<tr>
<td>4</td>
<td>Vauxhall Cavalier 1.6L</td>
</tr>
<tr>
<td>5</td>
<td>Vauxhall Cavalier 2.0Li</td>
</tr>
<tr>
<td>6</td>
<td>Vauxhall Cavalier 2.0GLi</td>
</tr>
<tr>
<td>7</td>
<td>Vauxhall Cavalier 2.0CDi</td>
</tr>
</tbody>
</table>
Any employees defined below 'grade 3' are not eligible for a Company car, for example Secretaries and clerical staff.

The car grade is not specifically related to the employee's salary, however there is a general relationship as illustrated on the salary scale diagram below (figure 30):

![Salary Scale Diagram](image)

Figure 30. Salary Scales in Relation to Grade of Car for Company Employees.
Figure 30 illustrates that there is a clear increase in salary as the grade of car improves, however the relationship between salary and grade would indicate that the system is highly unstructured for the following reasons:

(i) The salary scale for grades one and two falls within the scale for grade three by £2,000 per annum at the lower end and by £1,000 per annum, at the upper end. This relationship does not match the model suggested in section 2.5.5 (figure 3) since the lower end of the grade three scale would be expected to be higher than that of grades one and two.

(ii) The lower end of the grade three 'a' scale is £4,000 higher than grade three, however both scales have the same upper level of £12,000 per annum. The original intention of grade three 'a' was to improve the standard of car for an employee without necessarily increasing his salary.

(iii) There is no overlap in salary between scales three 'a' and four, instead there is a £2,000 gap.

(iv) Scales five and six offer equal salaries, with a difference in car being the only improvement in moving up from one grade to the next.

(v) There is no salary overlap between grade six and grade seven.

(vi) The salary bands (ie. the difference between minimum and maximum on any scale) vary as follows:

- Grade 1 & 2 - £6,000
- Grade 3 - £9,000
- Grade 3A - £5,000
- Grade 4 - £5,000
- Grade 5 - £7,000
- Grade 6 - £7,000
- Grade 7 - £6,000

The above analysis indicates that the car grading system relates to salary (ie. an improvement in car generally indicates an improvement in salary) however this does not always follow, and the overall conclusion is that the car grading system is separate from salary level. There is no formal salary grading structure, and few members of staff other than managers understand their position within the salary scales shown. The writer therefore recommends that the salary structure is reviewed, with a view to introducing a more structured system in the long term. This change may have to be gradual as staff become realigned on the salary scale. The car grading system should also be revised, since the current system is illogical in its relation to salary level.
4.5.5 Profit Share Scheme

The Company operates a 'Staff Profit Share Scheme' (78) which operates in the following way:-

(i) ELIGIBILITY

The scheme applies to monthly paid staff and weekly paid office staff who are entered onto the scheme.

(ii) PAYMENT

Payment is made once per year in November.

(iii) THE SCHEME

The scheme is operated in two parts (known as Profit Share Pools) as follows:-

Profit Share Pool I

This can be earned by employees employed in a profit centre. The amount of profit share available in any profit centre will be 90% of the amount by which net profit exceeds 80% of the budgeted net profit, until 110% of the budgeted net profit is achieved, plus 25% of the excess over 110% of budgeted net profit. The profit share is distributed to the eligible persons by the ratio of their salaries to the total gross salaries in that profit centre.

Profit Share Pool II

This can be earned by all eligible employees. The amount of profit share available will be 30% of the amount by which net profit exceeds 80% of the budgeted net profit, until 110% of budgeted net profit is achieved plus 6% of the excess over 110% of budgeted net profit.

Profit Share Pool I is payable to employees operating within a profit generating area of the Company (a profit centre), and Profit Share Pool II is payable to employees operating within a non-profit generating area of the Company (eg. administration).
An example of the operation of Profit Share Pool I is as follows:

(1) Budgeted Net Profit = £50,000
(2) 80% of Budgeted net Profit = £40,000
(3) Actual Net Profit = £45,000
(4) Difference between (2) & (3) = £5,000
(5) 90% of (4) = £4,500 This is the sum of profit for sharing amongst eligible employees.
(6) Eligible employees' salaries as follows:

<table>
<thead>
<tr>
<th>Salary</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
<td>£27,000</td>
<td></td>
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<tr>
<td>£22,000</td>
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<tr>
<td>£21,000</td>
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<tr>
<td>£19,000</td>
<td></td>
</tr>
<tr>
<td>£16,000</td>
<td></td>
</tr>
<tr>
<td>£8,000</td>
<td>£113,000</td>
</tr>
</tbody>
</table>

TOTAL £113,000
(7) Proportion of profit for each employee is calculated as follows:

- £27,000/113,000 x £4,500 = £1,075
- £22,000/113,000 x £4,500 = £876
- £21,000/113,000 x £4,500 = £836
- £19,000/113,000 x £4,500 = £757
- £16,000/113,000 x £4,500 = £638
- £8,000/113,000 x £4,500 = £319

TOTAL £4,500

This profit share represents a 4.0% increase on each salary.

As illustrated in the above example, this profit share scheme can significantly improve an employee's income, even where the actual net profit does not reach budgeted figures, and as a result compares favourably with those examples quoted in section 2.5.5, however the Company does not operate a staff share purchase scheme or bonus payment scheme.

The author proposes that an example calculation is shown in the Staff Handbook in order to illustrate the potential gains to staff, and this in turn should enhance the motivational element of the scheme.
4.5.6 Employee Benefits

The Company operates a pension scheme, a permanent health insurance scheme and a private medical insurance scheme.

(i) Company Pension Scheme (80)

The pension scheme provides a pension related to salary on retirement, and life assurance in the event of early death. The funds of the scheme are independent of the Company and Company funds.

Permanent full-time staff who are over the age of twenty-one and under the age of sixty are eligible to join the pension scheme. Payments include 5% of the pensionable salary, and contributions qualify for full tax relief. Contributions are paid monthly or weekly (depending on the frequency of pay), and the balance of the scheme is met by the Company. Additional voluntary contributions (AVC's) can be paid into the scheme if the employee chooses.

The annual pension from the normal retiring date (sixty-five years for men and sixty for women) is 1/60th of the final pensionable salary for each complete year of pensionable service. For example, twenty years of pensionable service would result in a pension of one third final salary. It is important to note that the final pensionable salary is calculated by taking the average of the best three consecutive pensionable salaries in the ten years ending on the financial year prior to the normal retiring date, and then taking the highest of these average amounts.

There is a facility for employees to take an early retirement pension with the Company's consent on or after the 50th birthday, or at any time on account of incapacity. A late retirement pension can also be taken which results in an increased pension, and a dependent's pension can be provided to provide a pension for a named dependent after the employee's death. A tax free cash sum can also be paid in exchange for part of the pension.

If the employee dies in service before the normal retiring date a cash sum equal to four times pensionable salary will be paid, together with a refund of all contributions. If the employee is married, a spouse's pension will be paid.

The pension increases at 3% per year compound, which highlights the importance to a pensioner of low inflation in the economy, since any inflation greater than 3% devalues the pension itself. All pensions are taxed as earned income, however cash sums taken on retirement and lump sum death benefits are free of all tax.

The scheme is administered by trustees who are appointed by the Company.
(ii) Permanent Health Insurance Scheme (81)

The purpose of this scheme is to provide an income for employees if they are disabled by injury or sickness for a considerable time.

The eligibility for joining the scheme is the same as the rules for the pension scheme. In the event of prolonged disability benefit will be paid as follows:-

1. Amount of benefit - 75% of weekly salary less the National Insurance Sickness and Validity Benefits applicable to a single person.
2. Entitlement to benefits will commence upon the expiry of the first thirteen consecutive weeks of disability.
3. Benefits will not be paid beyond the age of sixty-five for men and sixty for women.

The Company meets the whole cost of the scheme.

(iii) Private Medical Insurance Scheme (78)

The Company operates this scheme for staff, and bears the cost of the employee's premium. Employees who wish to cover the cost of their immediate family (ie. spouse and children up to the age of twenty-one) may do so at their own cost which is deducted monthly from salary. Discounted rates are available through the Company.

This benefit is defined as a taxable benefit which is recovered through the Inland Revenue's Pay As You Earn (PAYE) system as shown in the following example:-

The premium for 1990/1 was £133.20 per employee.

Tax due on this benefit in most cases would be 25% of £133.20 = £33.30.

This tax would normally be deducted over a twelve month period, in arrears.

The current organization used by the Company for private medical insurance is BUPA.

(iv) Other Benefits

As already discussed the Company provides all site staff with Company cars, including managers, directors and certain administrative staff.
Petrol is provided for all business mileage and reasonable private mileage.

Relocation expenses are offered to employees at the discretion of the directors.

The writer proposes that the benefits discussed are highlighted during the recruitment and selection process, with the objective of attracting potential recruits of a suitable calibre.
PERFORMANCE EVALUATION

The Company does not operate a formal staff performance evaluation system.

Some years ago the directors attempted to introduce a staff appraisal system, with the intention of combining this exercise with the annual salary review. Managers were asked to speak with their staff on a one to one basis, with the objective of discussing individual performances over the previous financial year. Interviews with managers involved with this appraisal process have indicated that it was not successful, and if anything generated a feeling of ill-will between manager and subordinate alike. As a result of this failure there was a lack of commitment to continue the appraisal system, and consequently no current form of staff performance evaluation exists.

The reasons for the failure of the Company's appraisal system have been discussed with those managers interviewed, and can be summarized as follows:-

(i) Both managers and staff had received no formal training for operating the appraisal system.

(ii) There was no basis against which to judge any individual's performance. Any judgement was therefore subjective.

(iii) There were no job descriptions available to define employees' responsibilities. As a result there was no formal statement defining what an employee was expected to achieve. This comment relates to (ii).

(iv) There was no attempt to link training into the appraisal. A positive method of addressing weaknesses is to offer training as a way of reducing any problems.

(v) The appraisal was linked to salary review. Any negative comments were therefore seen as reducing a potential salary increase, which is seen by many employees as a highly emotive subject.

(vi) As a result of the points discussed, the whole appraisal process became a negative exercise where many employees saw it as an opportunity to explain their dissatisfaction over certain issues of either Company policy, management style, or both.

Most managers within the Company who experienced the problems discussed are now very sceptical and cautious over introducing a new performance appraisal system, which from the discussion is section 2.6.2, is seen as a key part of an HRM system.
The author recommends that the directors should seriously consider the development and introduction of a staff appraisal system, however all managers and staff must be trained in the operation of the system from the outset.

4.7 TRAINING AND DEVELOPMENT

4.7.1 Training Policy

The Company's training policy is included in its Staff Handbook which is issued to all employees, and is as shown in figure 31 as follows (78):

TRAINING POLICY

The Company recognises its investment in human resources and is committed to provide further training for individual career development.

The programme of training will start with an induction into the Company's procedures. Training needs will be identified within two weeks of an individual joining the Company.

It will be the responsibility of the Training Manager to identify, in conjunction with the Line Manager, individual training needs. A twelve month programme will be drafted and training provided. There will be twelve quarterly reviews of training.

It is considered that after six months the induction training will be completed and individuals will transfer to career training schemes. By necessity these will be categorised into training for construction based staff and office based staff.

The induction process will comprise of a programme, followed by a three monthly and six monthly review. The target level of training during the six monthly induction period will be two working days or its equivalent.

Figure 31. The Company Training Policy.

The Training Policy shown agrees closely with Pratt and Bennett's recommendations (29) as discussed in section 2.7.3. The policy does not explicitly link the organizational objectives with training, however it does state that the Company 'recognises its investment in human resources'.
There is a clear definition of the purpose and priorities of training, although there is no statement on the commitment of resources. The responsibility of training is defined as lying with the Training Manager, although the Company has not appointed anyone into this position on a full or part-time basis. The policy also includes the types of training to be developed, including induction and career training for construction and office staff.

The recommendations regarding the Training Policy are shown in section 4.4.1.

4.7.2 Training Procedures

The Company Procedures Manual, compiled as part of the development of the quality system, contains one section devoted to training. The contents of this section are as follows:

(i) Induction Training.

This part states that all new staff undergo induction training, and then references the Induction Manual as discussed in section 4.4.

(ii) Technical Training.

The Procedures Manual states that staff should be adequately qualified, trained and experienced in appropriate techniques required to effectively perform any technical activities such as:

- On site construction processes and the appropriate controls required.
- Inspection and testing methods.
- Maintaining site records.
- Maintenance of measuring equipment.
- Effective use of surveying techniques.
- Optimum use of materials.
- Computer technology.
- Effective planning.

This part goes on to define a procedure for identifying training requirements, and allocating suitable resources to provide the necessary training.
(iii) Management Development.

This procedure states that managers and supervisory staff are adequately trained; that training requirements are identified; that potential managers are identified and their training requirements met; that training plans are produced and resources made available; that on going training is regularly evaluated, and that an on-going assessment of staff is maintained as the basis for the introduction of an appraisal system.

(iv) Quality Training.

This procedure states that all staff should understand the concept of quality assurance, quality management and the quality system. It also defines that internal training should be conducted where necessary by either training seminars, one to one training and the distribution of quality related information. The final part of this procedure states that staff should be trained to understand the Quality Policy, the compilation of quality plans and to understand quality auditing.

(iv) Safety Training.

This procedure relates to the training of all employees in Health and Safety at work. It states that instruction should be given to each employee as to the hazards which exist on site, ensuring they have the knowledge and ability to perform the task correctly and safely: the following points are specifically listed:-

- Personal responsibilities.
- Understanding the Company Health and Safety Policy.
- Legal requirements.
- Record keeping.
- Particular site hazards.
- The Company's arrangements for safety.

(v) Operator Training.

The procedure requires that critical site activities where records of operator training, qualifications or competence are required should be identified. A record of competence for on site operators should be kept which may include:-

- Previous experience.
- Driving/machine operators' licenses.
- Qualifications.
- CITB certificates.
- Welding certificates.
- Electrical qualifications.
(vi) Training Records.

This part states that all training records should be passed to a central training file, where training records should be maintained for each member of staff. This file should include:

- Education record.
- Previous experience.
- Professional qualifications.
- External training courses attended.
- Internal training courses attended.
- A current curriculum vitae (CV).
- Records of in-company performance.

The procedure also states that the training records should be readily retrievable and monitored against individual development plans.

The training procedure is comprehensive in covering all main areas of training to be carried out in the Company. Currently however the procedure is not operating as stated for the following reasons:

(i) The reduction in the number of employees has resulted in difficulty in carrying out the level of in-house training required. This is particularly relevant to quality and safety training.

(ii) Training records are somewhat confused in the procedure with confidential employee records. Certain information (eg. salary or disciplinary records) should remain confidential to management, however training records and qualifications do not give rise to the same need for confidentiality. There is therefore no need to maintain a training file with a current CV or a record of in-company performance. This is particularly relevant since a third party auditor may need to gain access to the training record file as the maintenance of such records is a requirement of BS 5750.

(iii) Training records are not maintained for all personnel.

(iv) Induction training is not carried out according to the Induction Manual.

The Company manages its technical training function through a Senior Site Agent, who is the only Chartered Engineer within the organization. He oversees the training of the graduate civil engineers in the Company who are progressing towards Chartered Engineer status with the Institution of Civil Engineers.
Management development has been an active area of training, and has been managed by one of the Joint Managing Directors. A management development programme was established with the help of a consultant and financed partly through a grant of £13,000 received through the Northamptonshire Training Enterprise Council (TEC). All levels of management have received general management training (eg. time management, financial control and leadership techniques), and this training has been largely tailored to individual requirements (eg. the Financial Controller did not require training in financial control). The management training was supported through the assistance of external mentors.

Operator and safety training is largely carried out with the support of the Construction Industry Training Board (CITB). The CITB is funded through contributions from construction companies, who pay three percent of their employees' total salary and wage costs. In return for this contribution the companies can claim training grants for any of their employees attending CITB approved training courses. The typical grant-aided training courses cover the following areas (83):-

(i) Youth training, including craft and technical training.
(ii) Planned work experience, including graduate/technical sandwich courses.
(iii) Short duration off-the-job training.
(iv) On-the-job training.

The writer proposes that the training procedures are reviewed in order to ensure that they reflect actual, as opposed to desired, practice.

4.7.3 Setting Up Company Training Courses

As part of a research programme conducted into the Company's management systems, one area of study centred around subcontract management. After the results of interviewing managers and staff were studied, it was clear that a majority felt themselves lacking in two key areas of knowledge:-

(i) The contractual differences between domestic, named and nominated subcontractors.
(ii) The correct conditions of contract applicable to different types of work and different clients.

This exercise highlighted a training need as defined in the Training Cycle model discussed in section 2.7.1. The next stage in satisfying this training need involved discussing the requirements with a training provider, which in this case was the Department of Civil Engineering at Loughborough University.
A lecturer specialising in contract law submitted a training proposal to the Company which detailed the training objectives and the course design. The second stage of the training cycle was therefore satisfied, with the remaining stages being to run the course and evaluate the results to determine whether the knowledge gap had been bridged.

Unfortunately the process described above is not always carried out when a Company training course is planned. A number of Contracts Managers and Site Agents were asked to attend management courses organized and run by the CITB. This course is called the 'Arousal Course', and is essentially a business game where a team of people are given the details of the business, and they then make decisions based on this information. The teams' business decisions are input into a computer simulation package which calculates the financial performance resulting from the decisions. At the end of the course each team presents the results of its business and the decisions behind them to a group of senior managers and directors.

The course described above was not planned according to the training cycle previously discussed. A training need was not formally assessed for all course participants, and consequently the course objectives were not directed at a clear need. The training was not discussed with the employees and their superiors, and as a result its benefit was not assessed.

The author recommends that all Company training courses are planned and implemented according to the training cycle defined in section 2.7.2.
4.8 EMPLOYMENT LAW

4.8.1 The Staff Handbook

The Company has produced a Staff Handbook which is designed to give a 'general outline of the main rules which affect an employee of the Company' (78). The rules apply to staff of all grades, and are designed to ensure that the Company complies with all current employment legislation. The contents of the handbook are as follows:

(i) Policies. These include policies for clients, employees, safety, quality, employment, retirement, redundancy, contracts of employment, change of address, remuneration, absence, holidays, profit share scheme, pension scheme, health insurance schemes, grievance procedure and disciplinary rules.

(ii) Training Policy. The Company's Training Policy is discussed in section 4.7.1.

(iii) General Matters. This section includes rules for transport, telephone usage, cars, personal property, security, documentation and information and outside occupations.

(iv) Statement of Terms of Employment for Staff. This is discussed in detail in section 4.8.2.

(v) Company Sick Pay Scheme. This details the procedure for dealing with absence from work, and the length and amount of sickness payment.

(vi) Statutory Sick Pay (SSP). The Company is obliged by law to pay an employee their entitlement under the SSP Scheme. This section explains the procedure for meeting this obligation.

(vii) Holiday Payments Scheme. The total number of days paid holiday for all employees is twenty-nine, of which eight days are Public Holidays. An additional five days holiday is granted after three years of service. The holiday period runs from 1 April to 31 March each year. The holiday entitlement is also defined in this section for employees joining the Company at various points in the year (ie. between 1 April and 31 July; between 1 August and 31 December; and between 1 January and 31 March).

(viii) Staff Profit Share Scheme. This is discussed in section 4.5.5.

(ix) Private Medical Insurance Scheme. This is discussed in section 4.5.6.
Grievance Procedure. This procedure defines the route through which staff should deal with personal grievances. The process is illustrated in figure 32 below (78):

SUGGESTED GRIEVANCE PROCEDURE FOR STAFF
(CONCILIATION MACHINERY)

RESPONSIBLE DIRECTOR

EMPLOYEE'S MANAGER

EMPLOYEE

Figure 32. Staff Grievance Procedure.

The procedure highlights that the 'employee should always satisfy himself that they have had a fair hearing and, if not satisfied, should say so at the time and ask for their complaint to be recorded in writing' (78). This process is important in terms of personnel law, since any action resulting from the operation of this procedure (eg. the dismissal or disciplining of an employee) may need to be supported with written evidence.

Disciplinary Rules. This section summarises the disciplinary procedure, which is illustrated in figure 33. The following are examples of misconduct listed in the Staff Handbook which may give rise to disciplinary action (78):

(1) Normally Involving Warnings.

. Bad timekeeping or absenteeism without permission.
. Minor insubordination or insolence to senior management.
. Poor workmanship or output below expectations.
. Unsafe working.
. Threatening physical assault on fellow employees.

(2) When Summary Dismissal Will Result.

. Physical assault on a fellow employee.
. Malicious damage to Company, or a fellow employee's property.
. Deliberate and consistent falsification of Company records or documents.
DISCIPLINARY PROCEDURE

Employee informed of complaint(s) against them

Employee can prepare case orally or in writing

Employee may be suspended on full pay whilst investigation is held

Case considered by immediate manager

Disciplinary action requiring verbal or written warning given by immediate manager

Gross misconduct referred to senior management for consideration of summary dismissal

Disciplinary action recorded in employee's personal file

Figure 33. The Disciplinary Procedure.

This procedure provides the employee with a clear understanding of the likely action which would result from the misconduct described, and it also provides the Company with a clear basis against which to judge misconduct by any of its employees. The employee would effectively be considered to have breached a contract of employment, as discussed in section 2.8.4, if they behaved in one of the ways described in this procedure.

(xii) Redundancy Policy. In order to comply with the Employment Protection Consolidation Act 1978 (EPCA), the Company has defined a redundancy procedure which details its policy for making staff redundant.
Of particular relevance here is a section regarding selection of staff for redundancy against a set of criteria, which are as follows (78):

- Capabilities.
- Reliability.
- Conduct and work record.
- Suitability for work which remains available.

If an employee were selected for redundancy against this set of criteria, it would be incumbent upon the Company to prove that the individual did not satisfy the criteria listed as well as another employee holding the same job title and carrying out similar duties. This would then confirm that the redundant employee had not been discriminated against (e.g. for racial reasons), and as a result the Company's employee records should be comprehensive, and should address the criteria listed.

(xiii) Health and Safety Policy. In order to satisfy the Health and Safety at Work Act (1974), the Company has a Health and Safety Policy supported by details of health and safety responsibilities of employees and managers. A separate Health and Safety Booklet and Manual is issued to all site staff.

(xiv) Quality Policy. A statement of the Company Quality Policy is shown to emphasise the importance of this subject to the organization.

(xv) Equal Opportunity Policy. This is included in order to satisfy the Race Relations Act 1976, the Equal Pay Act 1970, The Sex Discrimination Act (1975 and 1976), and the Disabled Persons Act 1944. The following areas are covered:

- Responsibility for implementing the policy. This lies with the directors.
- Grievance.
- Recruitment and Selection.
- Training.
- Promotion.

As a result of the detail included this section satisfies the key employment legislation as discussed in section 2.8.3.

(xvi) Company Car Scheme. This is discussed in section 4.5.4.
As illustrated from this section, the Staff Handbook is comprehensive, and satisfies the requirements of employment legislation covered in section 2.8. The issue of the handbook to all staff is of great importance, because it is the Company's sole method of communicating its HRM policies. This process ensures that all staff understand their rights and the likely action to be taken if misconduct occurs.

4.8.2 The Contract of Employment

The contract of employment is contained within the Staff Handbook. The intended procedure for new employees is to complete the details contained within 'Statement of Terms of Employment' in the handbook, this is then photocopied and the employee is asked to sign and return the copy, which is then included in the personnel file. The signed return of this document confirms that the employee has received a handbook and therefore understands the rules contained within it. Additionally this procedure also confirms that the Company has complied with the EPCA (1978).

The particulars included within the Statement of Terms of Employment are as follows (78):

(i) Name of employer.
(ii) Name of employee.
(iii) Title of job.
(iv) Date of commencement of continuous employment. There is also a facility here to state that employment with a previous organization can be counted as continuous employment with the Company.
(v) Salary. Frequency of payment. Frequency of revision and when notification of change is made.
(vi) Terms of Employment. Reference is made to the rules within the handbook.
(vii) Normal working hours.
(viii) Notice periods. These are as follows:
       . one week for each full year of service up to a maximum of twelve weeks after twelve year's service.
       . for weekly paid staff the minimum period of notice shall be one week and for monthly paid staff the minimum period of notice shall be one month.
(ix) Notice period that the employee should give to the Company.
(x) A statement referring to the grievance procedure.
(xi) A statement referring to the disciplinary rules.

The document is then signed by a director. A copy of this document is then countersigned and dated by the employee as already discussed.
The Statement of Terms and Conditions discussed is generally in broad agreement with the requirements under the EPLOCA (1978); however there is no information available to allow employees to calculate their holiday pay as required by the EPLOCA.

After interviewing three managers within the Company it is evident that a significant proportion of employees have not been issued with completed terms and conditions of employment, and as a consequence the Company is not in compliance with the law (ie, the EPLOCA 1978). Additionally the Company has no proof that these employees are aware of the rules contained within the Staff Handbook, and as a result the Company is more exposed to challenges of unfair dismissal, where employees are dismissed through disciplinary action or redundancy. This is particularly relevant because an accusation of unfair dismissal levelled at an organization from an ex-employee places the burden of proof onto the Company.

The Staff Handbook appears to be generally poorly produced, which may generate a perception of unprofessionalism with employees. The document should be considered of significant importance to the Company in the context of HRM, and a higher grade of presentation may enhance the status of this subject within the organization.

The author recommends that the Staff Handbook is issued to all staff where not already done so; that all staff have their own terms and conditions of employment; that signed copies of all terms and conditions of employment are held centrally; and that the presentation of the handbook is improved.
4.9 THE COLLECTION AND USE OF PERSONNEL INFORMATION

4.9.1 Introduction

The Company generates personnel information as a result of the operation of the systems discussed in this chapter. The current information generated is as follows:

(i) Job descriptions.
(ii) Pensions and remuneration administration.
(iii) Staff records, including application forms and CV's.
(iv) Training records.

The information described above is maintained within one personnel file per individual. There is no separation of training records and remuneration records.

The following sections discuss the current system in more detail together with potential improvements.

4.9.2 Staff Database

There was traditionally no overall database of all employees within the Company, whether manual or computerised. As a consequence no one within the Company knew at any one time how many staff were employed, or what the breakdown of those staff was (eg. the total number of Site Agents or Engineers).

A database was therefore developed by the author using the spreadsheet software Lotus 123. The layout of the database is shown in figure 34.

<table>
<thead>
<tr>
<th>EMPLOYEE LIST CORRECT AT (DATE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SURNAME</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>SMITH</td>
</tr>
<tr>
<td>JONES</td>
</tr>
<tr>
<td>WRIGHT</td>
</tr>
</tbody>
</table>

Figure 34. The Layout of the Employee Database.

The database lists the surname, initials, usual name, job title, location of office (eg. HO=Head Office), and the salary code for the accounts computer for each employee. The database displays a summary of the total number of employees at each office in the Company, broken down into staff, labour, part-time and student categories. The database is updated at monthly intervals and issued to management.
The staff database was expanded by the writer into an employee spreadsheet which shows the total number of employees under each job title at each area office. An example of this is shown in figure 35.

EMPLOYEE SPREAD AS AT (DATE)

<table>
<thead>
<tr>
<th>JOB TITLE</th>
<th>HO</th>
<th>NORTH</th>
<th>PETER</th>
<th>NEW</th>
<th>KINGS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MD</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>ACCOUNTANT</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>AREA MANAGER</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>SECRETARY</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>SITE AGENT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>26</td>
</tr>
</tbody>
</table>

Figure 35. The Layout of the Employee Spreadsheet.

The development and maintenance of the information described in this section has been of substantial value to management involved in HRM (e.g. accounts staff paying salaries, or directors organizing training programmes). The ability to identify the whereabouts of all staff in the organization is invaluable management information.

4.9.3 Personnel Records

The current forms used by the Company to maintain and update the personnel details are as follows:-

(i) Details of New Employee. This form includes the following categories:-

- Full name and address.
- National Insurance number.
- Date of birth.
- Date employment started.
- Job title/area.
- Salary/rate of pay.
- Bank details.

(ii) Details of Employee Leaving/Changes. This form includes the following:-

- Full name and address (change).
- Date and reason for leaving.
- Change of salary/rate of pay.
- Change of job title/area.
- Change of bank.

155
(iii) Personnel Details. This form includes the following:-

- Full name and address.
- Payroll number.
- Department.
- Job title.
- National Insurance number.
- Date left.
- Reason left.
- Pay details, including date, rate and grade.
- Training details, including date, course title and provider.
- Pay adjustments, including date effective, amount and reason.

A study of these documents illustrates that much of the information is duplicated, and as a result the following documents have been proposed, developed and prepared by the author to improve the system. Figure 36 illustrates a revised 'Personnel Details' form and figure 37 illustrates a new 'Details of New Employee/Employee Changes' form.

The revised documents are designed to operate in conjunction with one another. The Personnel Details form will be maintained confidentially in a Head Office file maintained for each employee. The Details of New Employee/Employee Changes form will be used to update the main Personnel Details form, and is a method of communication between the employee and his manager and the person responsible for HRM.

The current Personnel Details form combines confidential details (eg. salary), with training details, which any need to be accessed by auditors as part of the operation of the quality system. This information will need to include professional qualifications, membership of professional bodies, and a record of training courses attended. A proposed Training Record form is shown in figure 38.
CONFIDENTIAL
PERSONNEL DETAILS

PERSONNEL DETAILS
SURNAME: FORENAMES:
D.O.B.: ADDRESS:

TEL. NO.: POSTCODE:

BANK DETAILS
NAME: ADDRESS:
SORT CODE:
ACC/ROLL NO.: POSTCODE:

JOB DETAILS
JOB TITLE: DEPARTMENT:
PAYROLL NO: N.I. NO.:
DATE JOINED: DATE LEFT:

NEXT OF KIN DETAILS
NAME: RELATIONSHIP:
ADDRESS: TEL. NO.:

SALARY DETAILS
<table>
<thead>
<tr>
<th>DATE</th>
<th>RATE</th>
<th>CAR GRADE</th>
<th>REASON FOR CHANGE</th>
</tr>
</thead>
</table>

| | | | |

DISCIPLINARY DETAILS
<table>
<thead>
<tr>
<th>DATE</th>
<th>TYPE OF WARNING</th>
<th>REASON</th>
</tr>
</thead>
</table>

| | | |

Figure 36. The Revised Personnel Details Form.
### Details of New Employee/Employee Changes

<table>
<thead>
<tr>
<th>Surname:</th>
<th>Forenames:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**To be completed by employee** (where appropriate)

#### Personal Details

<table>
<thead>
<tr>
<th>D.O.B.:</th>
<th>Address:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tel. No.:</th>
<th>Postcode:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>N.I. No.:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

#### Bank Details

<table>
<thead>
<tr>
<th>Name:</th>
<th>Address:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sort Code:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Acc/Roll No.:</th>
<th>Postcode:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Next of Kin Details

<table>
<thead>
<tr>
<th>Name:</th>
<th>Relationship:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Address:</th>
<th>Tel. No.:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**To be completed by manager** (where appropriate)

#### Job Details

<table>
<thead>
<tr>
<th>Job Title:</th>
<th>Department:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Salary Details

<table>
<thead>
<tr>
<th>Date Effective</th>
<th>Rate</th>
<th>Car Grade</th>
<th>Reason for Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Disciplinary Details

<table>
<thead>
<tr>
<th>Date</th>
<th>Type of Warning</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Signed Manager: Name: 

Date:

Figure 37. Details of New Employee/Employee Changes Form.
## Training Record

### Qualifications Gained from Further/Higher Education

<table>
<thead>
<tr>
<th>Level</th>
<th>Subject</th>
<th>Institution</th>
<th>Year</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Membership of Professional Institutions

<table>
<thead>
<tr>
<th>Institution</th>
<th>Level</th>
<th>Joining Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Record of Training Completed

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Provider</th>
<th>Date(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 38. A Proposed Training Record Form.
The implementation of the suggested changes to the current HRM system would improve the record system. However the maintenance of a record of holidays, taken and owing, should be maintained in order to calculate money owed to staff for unclaimed holiday in the event of them leaving the Company. This could be maintained as a central record at the Head Office. Additionally a record of absence should be maintained, as a check for staff who are ill for prolonged periods (for SSP and Permanent Health Insurance considerations), and as a general measure of attendance.
The research into an active HRM system, as discussed in this chapter, has highlighted the following points:-

(i) The recruitment and selection process is carried out informally. The introduction of a more structured system would assist managers involved in the process, and provide added assurance that the best applicant was chosen for the position.

(ii) The core information for operating an induction programme is in place, however the Induction Manual requires revision. The Training Policy is comprehensive, however it does not currently reflect actual practice. The training procedures defined in the Procedures Manual are also detailed, however they should be reviewed to ensure that they reflect actual as opposed to desired practice.

(iii) The salary structure within the Company is highly flexible, and this can lead to some degree of inequity. Pay and benefits can be an emotive subject with some staff, and the current economic climate limits the Company's ability to improve remuneration. The discussion in section 4.5.4 does indicate that there may be some confusion over the relationship between car grade and salary level, and figure 30 indicates the lack of structure in this area.

(iv) There is great caution with senior staff over the introduction of a performance evaluation system, and the reasons for this are discussed in section 4.6.

(v) The Company has the essential documentation in place which forms the basis of an HRM system, and when operated correctly ensures compliance with current employment law. The key element is the Staff Handbook which contains the conditions of employment for each staff member, and when completed correctly ensures that staff understand Company policy relating to their employment. The handbook is not currently issued to all staff correctly (ie. with their terms and conditions of employment completed).

(vi) Current personnel information records are not tightly controlled and monitored. The use of separate filing systems for confidential records and training records would improve the system, as well as allowing for third party auditing of training records.

The current HRM system requires development, as suggested throughout this chapter, and improved control if it is to closely match the suggested models discussed in chapter two.
On the basis of this work, a 102 page report was presented to the directors which contained detailed proposals for a complete HRM system within the Company. This report was accepted by the directors as workable and necessary, and they are considering its implementation within the Company.
5. THE DEVELOPMENT OF QUALITY MANAGEMENT IN A CONTRACTING ORGANIZATION

5.1 INTRODUCTION

In June 1988 the cooperating Company began a project to introduce the concept of quality management into its business systems. The project was completed in June 1992, and included the development of all the documentation necessary to satisfy the requirements of BS 5750 Part Two.

The directors did not originally set an objective to gain certification to BS 5750, however their aim was to introduce the elements of the Standard which would ultimately improve the performance of the organization.

The initial phase of the project involved the production of a report for the directors on the current state of quality management in the construction industry, the requirements set out in BS 5750 Part Two, and the interpretation of the Standard in terms of construction industry requirements. This report was studied by the directors, and a programme for introducing a quality management system was then defined.

The key elements for introducing the system included the development, by the author, of a Procedures Manual, a Quality Manual, a Quality Plan, and Supplier and Subcontractor Evaluation Systems. This chapter discusses the development of the quality system with reference to the theoretical models discussed in chapter three.

The research carried out for this chapter included the study and evaluation of current quality documentation and procedures, together with development by the author of additional documentation and procedures. Together with the developments for the quality system, discussions were held by the author with Company managers and staff, representatives of third party certification bodies, and other quality management specialists.
5.2 MANAGEMENT RESPONSIBILITY

5.2.1 Organization

The Chairman of the Company initially proposed that the management systems in the Company should be reviewed and developed in order to improve financial performance. This proposition was discussed with other senior managers, and it was agreed to carry out a project with the aim of improving management systems with particular emphasis on:

(i) Materials management: representing approximately seventy percent of turnover.
(ii) Subcontract management: representing approximately twenty percent of turnover.
(iii) Plant management: representing approximately ten percent of turnover.

This work was carried out under the Teaching Company Scheme between Loughborough University and the Company. The research conducted for this thesis encompassed part of the work completed on the Teaching Company Scheme, however the research was expanded substantially beyond the development of the Company's quality system.

A management committee was established to oversee the running of the basic scheme, and this was made up of the Company Chairman, a senior manager, a Planning Engineer, and four University staff (including two lecturers, the head of department, and the author). The structure of the management committee is illustrated in figure 36.

![Figure 36. The Project Management Committee.](image-url)
The committee met every three months during the course of the project to review progress and to plan for the next period. The Company Chairman also chaired the committee, and in this way Stebbing's recommendations for the organizational element of introducing a quality system, as discussed in section 3.4.1, were satisfied (53).

The author was given the sole responsibility of developing the individual elements of the quality system as discussed with the management committee, and the Company and University staff provided advice and guidance on a day to day basis throughout the project duration.

5.2.2 Structure

The Company had not operated a formal quality management system before the implementation of the system as discussed in section 5.2.1. Due to the structure of the construction industry, with work being carried out on a number of different sites, the operation of a centralized quality system would be impractical since for logistic reasons quality could not be managed from one single location as suggested by Ashford (55).

The approach most applicable for construction organizations is to adopt a de-centralized quality system where Site Managers develop plans and procedures for inspection and testing to ensure that the work done matches the specification, as discussed in section 3.4.2. This approach was used in the Company as the basis for developing its quality system, and as a result the author undertook the role of the independent Quality System Manager as required by BS 5750 (56).

Based on the consideration of recommendations from the FCEC, as discussed in section 3.4.2, and an analysis of the organizational needs, the Management Organization Chart in relation to the Company's quality system is shown in figure 37.

This Management Organization Chart matches closely with the example shown in figure 10 (section 3.4.2) (58), although at the development stage of the system the author only had authority for development as he was not a direct employee of the Company.
5.2.3 Training

The introduction of a quality system with compliance to BS 5750 provided the catalyst for the Company to implement a training procedure, and this is discussed in detail in section 4.7.

This area of quality management relates directly to a key element of an HRM system, and this emphasises the close relationship between the two management systems. The introduction of quality management into an organization constitutes major change in its own right, where employees may have to adapt to new or modified procedures. As a consequence a comprehensive training programme was undertaken, for all Company employees, to introduce new concepts and ideas to them whilst providing a forum for communication with senior staff.

The initial training element involved all staff attending a half-day seminar where they were given an overview of quality management and BS 5750 Part Two. Subsequently all senior managers attended a one day training workshop on quality management, and Site Agents and Area Managers attended short training workshops where they learnt to compile Quality Plans.
The final key part of the training programme involved all staff attending seminars, in groups of ten, where a director and senior manager issued everyone with a Procedures Manual whilst explaining its operation. This also provided a forum for staff to ask questions relating to quality management in the Company, and to have an open discussion on the subject.

A substantial amount of one to one training also took place, particularly with Site Agents who compiled Quality Plans. The author was given responsibility for conducting the one to one training required.

The overall training programme is summarised in figure 38.

Figure 38. The Training Programme for the Introduction of the Quality System.
The training programme described in this section was designed to prevent the situation which Ashford describes as being 'dropped in at the deep end' (55), as discussed in section 3.4.3, however the programme was not coherently planned on the basis of need as defined in the Training Cycle in figure 6 (section 2.7.1), and there was no formal evaluation once each training element had been completed. This analysis corroborates with the conclusions drawn on the Company's training procedures as discussed in section 4.7.3, where a lack of planning and evaluation is apparent.

5.2.4 Auditing

After approximately one year of launching the Procedures Manual to all staff, an internal auditing programme was established by the writer. The directors considered that the quality system had reached a stage of development where it would be reasonable to carry out audits internally to determine how closely departments were working to the relevant procedures as defined by Lock and Smith (49).

By this stage of the project the Company had been restructured, and as a consequence the Chairman's position had been replaced with two Joint Managing Directors, one of whom replaced the Company Chairman as the project leader (or management committee Chairman as defined in figure 36). This Joint Managing Director established an Internal Auditing Team, made up of himself, the author, and three senior managers. The author coordinated the team in the role of the Quality System Manager, and he compiled an Internal Auditing Programme as illustrated in figure 39.

The Internal Auditing Programme was initially defined for a six month period, so that all departments were fully audited against relevant sections of the Procedures Manual in that period. This was particularly relevant because the certification bodies require the quality system to have been internally audited for a six month period before a third party assessment is carried out. The Programme was designed to ensure that all departments were audited in a logical sequence, and each department was fully audited over three separate months. The departments which were experiencing greater problems in operating the quality system were audited earlier on in the programme in order to allow enough time in the six month period to rectify any non-compliances. Any sections of the Procedures Manual which were related in terms of staff responsibility were audited on the same day by the same auditor (eg. estimating and planning, and purchasing were jointly addressed).
### Procedures

<table>
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<tr>
<th>PROCEDURES</th>
<th>FEB</th>
<th>MAR</th>
<th>APR</th>
<th>MAY</th>
<th>JUN</th>
<th>JUL</th>
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<td>5</td>
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<td>5</td>
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<td>4</td>
<td>3</td>
<td>6</td>
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<td>2</td>
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<td>4</td>
<td>3</td>
<td>6</td>
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<td>6</td>
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<td>5</td>
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<td>4</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
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<td>4</td>
<td>6</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
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<td>4</td>
<td>6/7</td>
<td>5</td>
<td>2/7</td>
</tr>
<tr>
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<td>7</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>FINANCE &amp; COST CONTROL</td>
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<td>-</td>
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<td>7</td>
</tr>
<tr>
<td>VALUATION &amp; CREDIT CTL</td>
<td>1/7</td>
<td>4</td>
<td>2</td>
<td>3/7</td>
<td>6</td>
<td>5/7</td>
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</tbody>
</table>

The 1 to 7 coding represents all departments in the Company (eg. 1 = Head Office and 7 = Administration).

Figure 39. The Internal Auditing Programme.

As part of the development of the Procedures Manual, a Quality Auditing Procedure was developed by the writer based on Stebbing's recommendations (53), as discussed in section 3.4.4. The Quality Auditing Procedure defines the following functions (82):

1. Planning the audit: an audit schedule should be established, from which the scope of the audit is identified. In liaison with the departmental manager, the auditee is notified of the date and time of the audit; the audit schedule, and the audit itinerary. The audit checklist is then prepared from the relevant procedures and job description.
Performing the audit: this procedure details that the audit follows the route defined:

- Conduct an entry meeting.
- Conduct the audit using the checklist.
- Seek objective evidence of the procedures being followed.
- Define the status of each state.
- Identify any non-compliances.
- Prepare Corrective Action Requests (CAR's) and an Audit Report upon completion of the audit.
- Conduct a final (exit) meeting.
- Agree corrective action with the auditee and the effective date of this action.
- Conduct a follow-up audit to seek objective evidence that the corrective action has been implemented.
- Close out CAR if action has been taken. Seek management support if the action has not been taken.
- Maintain a log of all audits and CAR's issued.

This procedure agrees closely with the model discussed in section 3.4.4, and satisfies the requirements of BS 5750. The documents were prepared by the writer for this auditing procedure, and are as follows:

(i) Company Quality Management Audit Checklist. This includes information to list the following:

- Department.
- Audit number.
- Persons involved and positions.
- Date.
- Procedures Manual reference.
- Requirement of procedure.
- State (ie. is the procedure in operation).
- Comments.

The main body of the form appears as follows in figure 40:

<table>
<thead>
<tr>
<th>PROCEDURES MANUAL REF.</th>
<th>REQUIREMENT</th>
<th>STATE Y/N</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(ii) Company Corrective Action Request.
This includes information to list the following:-

- Department.
- Audit number.
- Persons involved and positions.
- Date.
- Condition (ie. a description of any non-compliances found).
- Proposed corrective action and measures to prevent recurrence.
- Follow-up audit dates.
- The form is then signed by the auditee and auditor.

(iii) Company Quality Management Audit Summary.
This includes information to list the following:-

- Department.
- Audit number.
- Persons involved and positions.
- Date.
- Summary of audit. This is a general overview which should briefly describe any significant non-compliances and general observations.
- A list of CAR's issued is listed at the bottom of the form.

The documents and procedures listed, although specifically developed for use within the quality system discussed, would be applicable to any auditing programme, since the basic requirements are common to all quality systems.
5.3 DOCUMENTATION

5.3.1 Quality Policy

In liaison with the Company Chairman and the management committee discussed in section 5.2.1, a Quality Policy was developed as the first element in the Company's quality documentation, as defined in the documentation pyramid discussed in section 3.5.1. Figure 41 shows the Quality Policy.

QUALITY POLICY

It is the Directors' continuing policy for the Company to fully utilise its resources to complete building and civil engineering projects to programme and to the standards specified by its clients. By consistently succeeding in this objective, the Company will give customers satisfaction and value for money.

The Company growth, coupled with the increased complexity of projects undertaken, requires high levels of management control. The principles of quality management as defined in BS 5750 and other Standards are recognised as an essential prerequisite of this control.

All staff are encouraged to understand the importance of quality and to develop an attitude of mutual cooperation by working to a system where they 'get it right first time'. By planning for the achievement of quality, staff understand the needs and expectations of customers and are in a position to conform to these requirements. By employing a disciplined approach as defined in a system of formal procedures, specified quality standards will be assured.

The Company selects reliable experienced suppliers and subcontractors with a positive attitude towards mutual cooperation, who meet the required Quality Standards.

It is recognised that quality management is the basis for the continual review of the Company's systems to reflect current requirements. Designated staff appointed to review and improve procedures will receive full support from the Directors.

All employees will be experienced and trained in the relevant disciplines to perform their duties in a satisfactory manner for the successful implementation of this Quality Policy.

Figure 41. The Company Quality Policy.
When compared with Feigenbaum's suggestion of the contents of a quality policy (51), as discussed in section 3.5.2, the Company's Quality policy compares in the following ways:-

(i)  The Policy does address how quality plays a role in the acceptance of the organization's services by its customers. This is addressed in paragraph one, where it is stated that the Company aims to complete projects to programme, to the standards specified, and to give value for money.

(ii) The Policy states how quality plays a role in the business success of the organization and its employees. This is described in paragraphs two and three, where it is stated that quality is a prerequisite of management control and staff are encouraged to 'get it right first time'.

(iii) The policy states that quality involves cooperation with suppliers and subcontractors, and that it is the basis for continual review of the Company's systems. There is therefore a description of how quality affects other business factors.

(iv) There is no clear reference to the fact that employees should know their organizational responsibilities, although there is clear reference to their own disciplines in paragraph six, where it is stated that they will be experienced and trained.

(v) There is no specific reference to how procedures should be carried out, however it is stated in paragraph three that if staff follow a system of formal procedures, specified quality standards will be assured.

(vi) There is no clear comment on the responsibility of suppliers and subcontractors, however paragraph four emphasises the need for mutual cooperation.

The Company Quality Policy matches the FCEC's recommendations closely (58), by defining the Company's activities; the emphasis on client satisfaction; the explanation of the operation of a quality system, and the relevant Standard on which the system is based.

From this detailed analysis, it can be concluded that the Company's Quality Policy compares very closely with the models discussed in section 3.5.2.
5.3.2 Quality Manual

The Company Quality Manual was developed by the author as the next stage in the documentation pyramid, and it has the following contents page (85):-

(i) Introduction and Objectives.
(ii) Scope of Activities.
(iii) Quality Policy.
(iv) Management Structure.
(v) Quality System Organization.
(vi) Quality System Outline and Documentation.
(vii) Contract Review.
(viii) Document Control.
(ix) Purchasing.
(x) Purchaser Supplied Product.
(xi) Product Identification and Traceability.
(xii) Construction Process Control.
(xiii) Inspection and Testing.
(xiv) Inspection and Test Status.
(xv) Control of Nonconformance.
(xvi) Corrective Action.
(xvii) Handling, Storage, Packaging and Delivery.
(xviii) Quality Records.
(xix) Internal Quality Audits.
(xx) Training.
(xx) Statistical Techniques.
(xxii) Appendices: Management Structure.

The contents shown above agree closely with Ashford's recommendations as illustrated in section 3.5.3 (55), and a description of the contents is discussed as follows (85):-

(i) Introduction and Objectives. This gives an overview of the Company's approach to quality based on BS 5750 Part Two. It then describes the contents of the manual, and its purpose which is defined as:-

- Promoting the recognition of quality throughout the Company.
- To provide a tool for assisting the efficient integration of new staff.

(ii) Scope of Activities. This section describes the structure of the Company and its main business activities.

(iii) Quality Policy. The Quality Policy as discussed in section 5.3.1 is included here.
(iv) Management Structure. This essentially refers to a Management Structure Chart.

(v) Quality System Organization. The Board of Directors are defined as being responsible for ensuring that the Company's business systems are managed effectively.

(vi) Quality System Outline and Documentation. The documentation developed as part of the quality system is listed in this section.

(vii) BS 5750 Clauses. All remaining sections in the manual define how each clause in the British Standard is addressed in the quality system, and to which section in the Procedures Manual the clause is referenced.

(viii) Appendices. The appendices include the Management Structure Chart, the Quality System Outline (i.e. the documentation pyramid discussed in section 3.5.1), the Procedures Manual Index, and the Quality Plan Index.

The Quality Manual satisfies Lock and Smith's recommendations (49) as defined in section 3.5.3, since it includes the Quality Policy and the organization of the Company, together with the responsibilities for quality (defined as the Board of Directors). The manual also includes reference to lower level documents.

The Quality Manual has only been issued to directors and senior managers in the Company, and as a consequence it is not used as a tool for integrating new staff and does therefore not match Ashford's suggestion (55) that the manual should be used as a quality communication document for staff. The manual's use has been specifically for demonstrating to clients that the organization operates a quality system.

5.3.3 Procedures Manual

The Company Procedures Manual was then developed by the writer in conjunction with Company staff, and it has the following contents (82):-

(i) Estimating and Planning. This covers tender evaluation; tender registration; tender appraisal; sending for material and subcontract enquiries; resourcing; settlement of tender; contract confirmation; and pre-contract review.

(ii) Purchasing. This covers material requisitions; procurement planning; supplier assessment and selection; placing orders and control of purchasing data; and site order purchasing.
(iii) **Site Control.** This covers site costing; target cost forecasting; contract costing; site set up and resource verification; programming; information request; contract review; construction process control; and temporary works control.

(iv) **Document Control.** This covers correspondence control; filing control; contract document control; drawing control; proforma control; and document change control.

(v) **Material Control.** This covers procurement; verification of purchased materials; handling; identification and traceability; storage; packaging and protection; issue; purchaser supplied material; and materials received records.

(vi) **Inspection and Testing.** This covers inspection planning; inspection measuring and test equipment; material receiving inspection and testing; in-process and final inspection and testing; control and disposition of material nonconformance; control and disposition of product nonconformance; corrective action; and inspection and test status.

(vii) **Subcontract Control.** This covers subcontract registration and assessment; subcontract enquiry; placing the subcontract order; and subcontract management.

(viii) **Plant Management.** This covers office management; office hiring; site hiring; office off-hiring; site off-hiring; site plant management; plant payment; fuel control; and internal equipment.

(ix) **Quality Management.** This covers quality planning and quality auditing.

(x) **Training.** This covers induction training; technical training; management development; quality training; safety training; operator training; and training records.

(xi) **Health and Safety.** This covers safety organization prior to site; safety documentation; employment of young persons; Health and Safety Executive visits; safety newsletters; accident reports; and safety reports.

(xii) **Finance and Cost Control.** This covers document receipt; invoice clearing; material reserves; plant reserves; supplier payment; cost accounting; subcontract authorisation and payment; wages; miscellaneous; and financial accounts.
Valuation and Credit Control. This covers valuation planning; valuation assessment; valuation submission; and credit control.

The contents of the Procedures Manual agree closely with Stebbing's recommendations (53), as discussed in section 3.5.4. The manual also addresses the areas relating to BS 5750 Part Two as summarised below (82):

(i) Contract review. This is defined in section three of the manual to state that all contracts are reviewed, at time intervals applicable to the scope of works, to ensure that the requirements are adequately defined and any amendments to the works are understood.

(ii) Document control. This is defined in section four of the manual, and states that all contract drawings and documents are controlled to ensure only correct and up to date issues, inclusive of revisions, are available at the locations required. Distribution of the Quality Manual and the Procedures Manual is recorded, and changes to proformas are made by management in liaison with the appropriate users. Document Control Registers are maintained.

(iii) Purchasing. This is defined in section two of the manual, and states that suppliers and subcontractors are selected on their ability to meet the Company's quality standards. Suppliers and subcontractors are selected on the basis of previously demonstrated performance, or a pre-assessment of their capabilities. Purchasing documents carry clear descriptions of materials ordered, inclusive of any technical data. Verification of purchased materials is undertaken by designated personnel at source or upon receipt.

(iv) Purchaser supplied product. This is defined in section five of the manual. It states that where client materials or products are supplied for incorporation into the works, instructions defined in the Procedures Manual or Quality Plan shall be applied to ensure control.

(v) Product identification and traceability. This is also defined in section five of the manual, and states that the Company shall operate traceability systems for material to be incorporated into the works, where appropriate.
(vi) Process control. This is defined in section three of the manual, and states that production shall be planned in accordance with a time schedule of related activities with the resource available. Control is achieved by the effective use of appropriate method statements, conformance with reference standards and the Quality Plan. The monitoring and approval of such processes, including defined special processes, shall be appropriate to ensure the specification is met.

(vii) Inspection and testing. This is defined in section six of the manual, and states that the Quality Plan should be used to define any appropriate test and inspection plan for receiving, in-process and final inspection and testing. Hold Points should be defined and the appropriate verification activities implemented to ensure the finished product conforms to the specification. Incoming materials and the finished product should not be used unless the appropriate inspection and testing activities have been completed. Where the results of inspections are not available prior to installation (e.g., concrete cube tests), the material or product should be suitably identified to enable recall in the event of a nonconformance.

(viii) Inspection, measuring and test equipment. This is defined in section six of the Procedures Manual, and states that all measuring equipment that affects the quality of the final product shall be controlled and calibrated, or serviced, at regular intervals. The Quality Plan is used for planning and recording calibration or service details. Certificates and appropriate labels should identify the maintenance status of all instruments.

(ix) Inspection and test status. This is also defined in section six of the manual, and states that the inspection and test status of purchased materials or the final product shall be identified by the use of authorised stamps, tags, labels or quarantine areas.

(x) Control of nonconformance. This is also defined in section six, and states that materials and products should be supplied to a specified quality. Systems are established for controlling nonconformances on site, and provision is also made for suitable methods of identification, segregation and disposition.

(xi) Corrective action. This is also defined in section six, and states that appropriate corrective action will be implemented to resolve any identified problems.
(xii) Handling, storage, packaging and delivery. This is defined in section five of the manual, and states that on-site materials control is planned in advance. The protection of the finished product is planned to ensure that completed work is not damaged.

(xiii) Quality records. This is defined in section four of the manual, and states that Company records are controlled and maintained in accordance with contractual obligation to demonstrate that materials and finished work conform to the requirements.

(xiv) Internal quality audits. This is defined in section nine of the manual, and defines that the Audit Team shall establish, document and implement a programme of audits which shall evaluate the adequacy of the Procedures Manual and associated documents. Audits are carried out as discussed in section 5.2.4.

(xv) Training. This is defined in section ten of the manual, and defines that management should identify the training needs for all personnel to perform their tasks efficiently. This includes quality management training and is discussed in detail in section 4.7.2.

(xvi) Statistical techniques. This is not defined in the Procedures Manual since such techniques are not directly applicable to the Company's operations. BS 5750 Part Two states that statistical techniques shall be applied where appropriate to processes and to assess product characteristics (56), which is directed at manufacturing processes where such techniques as statistical process control (SPC) can be applied.

Table three illustrates the BS 5750 Part Two clauses included in the Procedures Manual and shows the sections within the manual where they are defined. This analysis highlights that the Procedures Manual has been developed around the functional activities of the organization, and when developing the manual it has been ensured that all requirements within BS 5750 Part Two are satisfied. None of the texts studied (as referred to in Chapter Three) have provided detailed guidance on the actual development of procedures for the manual, and this study emphasises that in this case the Procedures Manual was developed around functional departments or defined activities within the Company (eg. estimating and planning or purchasing). As a consequence Scrimshire's comment that 'you must write down what you do, and do what you say you do' (62) is satisfied; therefore the procedures become a true reflection of the Company's activities.
Table 3. An Illustration of the BS 5750 Part Two Clauses Within the Procedures Manual.

5.3.4 Quality Plans

The Quality Plan is a key part of the quality system, as discussed in section 3.5.5. The Company's Quality Plan was developed by the writer, in liaison with technical and site staff, to link with the procedures discussed in the previous section, and its contents are as follows:

(i) Revision Status and Distribution. This section defines the issue date of the plan, any details of revisions (i.e. the page number, date, and person responsible). A distribution list is also included, and against each name there is a controlled copy number and issue date.

(ii) Site Organization. This defines the names and positions of key site personnel, together with a site organization chart, an example of which is shown in figure 42.
(iii) Scope of Works. This section includes the activities for which the Company is responsible. An actual example of the Scope of Works for a bypass is as follows:—

- Fencing.
- Site clearance.
- Drainage and ditches.
- Earthworks.
- Road construction.
- Road signage.
- Landscaping.
- Traffic management.
- Attendance on Statutory Undertakers.

(iv) Specification. An example specification for the same bypass is as follows:—

The Specification for Highway Works amended by numbered appendices listed in Appendix 0/3 in Volume 2 of the Contract Documents.

This specification relates to the contract documents, however the detailed specification can be listed in this section of the plan, together with any relevant material certification schemes (eg. UK Certification Authority for Reinforcing Steels [CARES]).
Contract Review. This section defines the type and frequency of contract reviews for the duration of the contract. An example contract review is as follows:

- **Internal** - Project Team Meetings - Monthly
- **External** - Progress Meetings - Monthly

The internal review involves only Company staff, whereas the external review includes the client (or his representative), and the meetings are minuted by the client.

Contractor Design Elements. This section provides a facility to identify any element of the works that requires a design input from the Company. Any design periods are stated, together with information required from the client. This enables the client to review and approve the design elements which may include culverts, concrete mixes, bridge beams or temporary works design.

Document Control. This section provides a facility to record contract documents supplied and the date of supply. It may include the specification, drawings and Bills of Quantities. For a large contract a separate Drawing Register may be used and referenced from this section of the Quality Plan.

Suppliers. All material suppliers are defined in this section, with their name and business. There is an option for the client to disapprove of the selection and to state his reasons for doing so.

Plant Control. All plant suppliers are defined in this section, with the item of plant, the date required and the supplier's name. Again, there is an option for client disapproval together with the reasons for disapproval.

Subcontractors. This section is structured in exactly the same way as the 'Supplier' section, and requires that all subcontractors should be listed.

Construction Process Control. This section defines any critical activities, as defined by the Site Agent, where a written Method Statement is required. The Method Statement is referenced from this section, and for a bypass project critical activities may be defined as earthworks or excavations/drainage. The Method Statement for each critical activity would then list the key elements in that activity, and would be appended to the Quality Plan.
Process Inspection. This section defines critical activities which have been identified as Hold Points, where a Checklist is required to confirm that the works, delivered material, or plant conform with the specified requirements as defined in the specification. A Hold Point is a point where work may not proceed until a formal inspection has been carried out and verified with a Checklist. A person with practical knowledge should write the Checklist which can apply to the following parts of the works:

- Receiving of material.
- In the process of construction.
- Final inspection.

The key activities with their relevant hold points are listed in this section, against which a Checklist is referenced. The Checklist provides a detailed list of checkpoints (eg. pressure test for a sewage pipeline), the individual responsible for checking and a space for his initials and date once the check has been completed. Checklists, like Method Statements, are appended to the Quality Plan.

Inspection and Test Plan. This is essentially a Quality Control Schedule which defines any inspections, tests, approvals and certificates of conformity which are required for materials, suppliers, subcontractors or the constructed product. For example the contract documents may define this information, which for the bypass discussed would contain the following elements:

- Earthworks acceptability.
- Disposal of unacceptable material.
- Roadbase tests.
- Surfacing regularity.
- Surface texture.
- Concrete compliance.
- Bituminous materials.

All the above elements would be referenced against the relevant section of the contract requirements, and a frequency of inspection or test would be defined.

Traceability and Inspection Status. This defines the critical elements of the works and any incoming material requiring either:

- Identification and traceability. Identify any element of the works or incoming material that requires identification or traceability (eg. use a Concrete Delivery Register where appropriate).
A definition of the inspection and test status. Identify suitable use of markings such as authorised stamps, tags, labels or quarantine areas to ensure that the item or element has passed the required inspection and that the status is defined.

(xv) Equipment Calibration and Servicing. This section defines the procedures for the calibration or servicing of all measuring equipment. The instrument model, type and number is stated, together with scheduled servicing dates and the type of verifying document. For example, a Sokkisha theodolite may have the following servicing procedure:

Instrument to be checked and calibrated in a service test room of an approved supplier. Certification will be provided to confirm the instrument meets the manufacturer's standard.

(xvi) Control of Nonconformance. This section states the methods for dealing with material and product nonconformance. An example of a material nonconformance procedure is shown below:

- Identify nonconforming materials.
- Isolate materials into quarantine area.
- Issue nonconformance report to supplier.
- Record the nonconformance.
- Identify time by which corrective action is required.
- Await corrective action proposal from supplier.
- Assess corrective action proposal.
- If suitable, approve corrective action and identify the disposition of the material.
- If unsuitable, repeat steps 1 to 7.
- Ensure corrective action is implemented.
- Identify the apparent cause and the corrective action taken to prevent recurrence.
- Verify the completed corrective action.

(xvii) Materials Control. This section defines the procedures which will be adopted for storage, handling and protection of purchased materials. For example the procedure for storage of pipes or manhole components may be to store adjacent to permanent works in a clean sound area until required.

(xviii) Non-construction Processes. This section is used to define procedures for minimising or preventing environmental contamination or nuisance from the works (eg. traffic management or pollution control).
Quality Management. This final section defines the responsibilities for quality management for the project. Responsibilities defined are as follows:

- Implementation of the quality system.
- Ensuring that quality activities of subcontractors are carried out.
- Ensuring that all staff, employees and subcontractors are suitably competent, trained and experienced in the tasks allocated to them.
- Ensuring that the quality activities of other members of the team are carried out.

The Site Agent is generally stated as being responsible for these activities.

The Company's Quality Plan closely matches the recommendations put forward by Feigenbaum and Ashford, as discussed in section 3.5.5., however the plan should reference the Site Diary (where daily actions are recorded) in order to fully satisfy Feigenbaum's points. It is also notable that the Quality Plan pays minimal reference to the Procedures Manual, and this is of significance since there is a direct relationship in many areas (eg. the procedure for the selection of suppliers and subcontractors is defined in the manual and referred to in the plan).

BS 5750 Part 0 states that the quality plan should define an audit programme for the contract (52), and this is the most significant omission from the Company's plan. This point is confirmed by Ashford, who states that the audit programme should be included in the section referring to inspection and testing (55).

The Company directors initially intended to apply a Quality Plan to only major contracts, defined by a value of £250,000 or greater, due to the administrative requirement involved in producing the plan. However following the comments made by the Building and Construction Business Development Manager of the British Standards Institute (63) to the author, as discussed in section 3.5.5, an abbreviated Quality Plan was developed by the author for all contracts below £250,000. The abbreviated Quality Plan, (known as the Small Works Quality Plan), contains all the same sections as the main plan, however less space is provided under each heading.
5.3.5 Controlled Document Register

As part of the exercise of introducing a quality system, the writer produced a document control procedure in order to satisfy the requirements of BS 5750 Part Two, as discussed in section 3.3.4.

The initial phase of the development of this control involved collecting together all the documents in circulation within the Company. All the documents were then reviewed, and any duplications were removed. The next exercise involved sorting all documents into a logical order (eg. in relation to procurement, plant hire, or costing), and finally all documents were individually coded.

The coding system for each document includes a unique number (from 01 upwards), followed by a letter confirming its revision status (eg. no letter confirms no revision, 'A' confirms a first revision and 'B' confirms a second revision etc.). Figure 43 below illustrates the layout of the Controlled Document Index (87):

<table>
<thead>
<tr>
<th>DOCUMENT NAME</th>
<th>CONTROLLED COPY NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATERIALS RECEIVED SHEET</td>
<td>01</td>
</tr>
<tr>
<td>SITE DIARY</td>
<td>02A</td>
</tr>
<tr>
<td>PURCHASE ORDER</td>
<td>03A</td>
</tr>
<tr>
<td>PROCUREMENT SCHEDULE (MATERIALS)</td>
<td>04</td>
</tr>
<tr>
<td>MATERIAL REQUISITIONS</td>
<td>05</td>
</tr>
<tr>
<td>QUOTE ANALYSIS SHEET</td>
<td>06A</td>
</tr>
<tr>
<td>STANDARD ENQUIRY LETTER (MATERIALS)</td>
<td>07A</td>
</tr>
<tr>
<td>etc.</td>
<td></td>
</tr>
</tbody>
</table>

All the Controlled Documents are maintained in number order in a file, known as a Controlled Document Register (CDR). CDR's are issued to all secretaries within the Company, and act as a reference for all staff. When a document is revised or introduced, it is formally issued with a covering memorandum showing an 'Approved for Issue' stamp, to all holders of CDR's for inclusion. All old documents are destroyed.

This system is defined within the Procedures Manual as discussed in section 5.3.3.
5.4 PROCUREMENT

5.4.1 Control

The procurement element of BS 5750 Part Two, as discussed in section 3.6.1, is addressed in the Company Procedures Manual under the sections entitled 'Purchasing' and 'Material Control' as discussed in section 5.3.3 of this thesis.

The Purchasing section of the manual defines procedures for the assessment of suppliers and subcontractors and purchasing data, and the Material Control section defines procedures for the verification of purchased products.

The relationship between primary purchasers, contractors, subcontractors and suppliers, as illustrated in figure 13 (section 3.6.1), is a true representation of the Company's contracting position. In practice the Company acts as both the main contractor and as a subcontractor on different contracts, however the same procedures apply in each case and the key elements of procurement management will be discussed in greater depth in this section.

5.4.2 Supplier and Subcontractor Assessment

The appointed Buyer in the Company is responsible for the assessment of suppliers and subcontractors, in liaison with the Project Team (comprising the Contracts Manager, the Site Agent, and the Engineers and Foremen). Where suppliers and subcontractors have been used by the Company for a considerable period of time, they will have been evaluated as part of the evaluation system discussed in the next section; where the supplier or subcontractor has not been used before, an assessment form will be sent to them for completion.

The Vendor Assessment Questionnaire (VAQ) was developed by the writer in conjunction with the Company Buyers and Estimators as part of the introduction of the quality system. The VAQ includes questions on the following subjects (88):-

(i) Supplier name, address, telephone and facsimilie numbers.
(ii) Nature of business.
(iii) Name of parent company (if appropriate).
(iv) Details of the supplier's quality policy, quality manual and procedures manual.
(v) Name and position of quality representative.
(vi) Details of BS 5750 certification (where appropriate).
(vii) Branch details (ie. location, contact name, telephone number and daily capacity [for stone or concrete etc.]).
(viii) Details of pricing policy and discount factors.
(ix) Financial information (ie. annual turnover, credit limit and payment terms).
(x) Fleet details (ie. delivery vehicle types).
(xi) Stock details (ie. line of materials and major manufacturers).
(xii) Provision of Control of Substances Hazardous to Health (COSHH) Assessments.
(xiii) Availability periods.

The Subcontractor Assessment Questionnaire (SAQ), was developed by the writer in the same way as the VAQ, and is used in identical fashion to assess subcontractors before use. The SAQ includes questions on the following subjects (89):-

(i) Subcontractor name, address, telephone and facsimile numbers.
(ii) Nature of business.
(iii) Name of parent company (if appropriate).
(iv) Details of the subcontractor's quality policy, quality manual and procedures manual.
(v) Name and position of quality representative.
(vi) Details of BS 5750 certification (where appropriate).
(vii) Office details (ie. location, contact name, telephone number).
(viii) Type of subcontract (ie. labour only, labour and plant or full).
(ix) Geographical range.
(x) Number of employees and mobilisation period.
(xi) Time in continuous operation.
(xii) Financial information (ie. annual turnover, VAT number and company registration number).
(xiii) Insurance details.
(xiv) Details of work sublet to other contractors.
(xv) Details of plant owned.
(xvi) Example contracts of work completed for reference purposes (ie. contract name, value and the name of the main contractor).

Both Assessment Questionnaires provide the basis for pre-assessment of material suppliers and subcontractors, and the areas covered match Ashford's recommendations (55), which are discussed in section 3.6.2. Ashford does suggest, however, that the questionnaires should be specific to quality, and also request information on any quality audits carried out by major companies within the last twelve months.

The Company does not carry out second party audits on its material suppliers as suggested by the FCEC and Stebbing, however its Procedures Manual does include this option in the procedures for supplier assessment and selection (82).
The manual states that a supplier's capability shall be made where possible by either (82):-

(i) Past performance (Supplier Evaluation Reports).
(ii) Vendor Assessment Questionnaire (as discussed).
(iii) Inspection of supplier at source.
(iv) An interview of the potential supplier.
(v) Suitable references from other users.
(vi) Certification to BS 5750.

Points (i) and (ii) are clearly satisfied. Point (iv) occurs via a discussion with the supplier's representative on the Company's premises or on site, however point (v) is rarely followed. Point (vi) is followed where possible.

5.4.3 Supplier and Subcontractor Evaluation

In order to satisfy the requirements of BS 5750 in terms of the purchaser (in this case the Company) monitoring the performance of suppliers and subcontractors, as discussed in section 3.6.3, the Company operates supplier and subcontractor evaluation systems.

The Supplier Evaluation System was established and maintained by the author in conjunction with the Site Agents and Buyers in order to evaluate all material suppliers on the basis of the following (90):-

(1) Quality of product or material.
(11) Availability/ability to meet the requirements in the requested time.
(iii) Quantity/accuracy of order.
(iv) Delivery time.
(v) Liaison/service.
(vi) Price.

The criteria were designed to fulfill three requirements which are as follows:-

(i) To provide useful supplier performance information to the Buyers.
(ii) To enable the Site Agents to objectively measure the performance of the suppliers against the criteria defined.
(iii) To satisfy the requirements of BS 5750.

On the basis of the evaluation criteria, a Supplier Evaluation Report (SER) was developed by the author, and its layout is illustrated in figure 44 (90).
The writer proposed that the SER was completed by the Site Agent on a monthly basis for the duration of the contract, and this was accepted by the Company. Each of the performance criteria are rated on a one to five basis; the ratings are defined in Table 4 as follows (90):

<table>
<thead>
<tr>
<th>RATING</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Excellent (above normal expectations)</td>
</tr>
<tr>
<td>4</td>
<td>Acceptable standard (all requirements met)</td>
</tr>
<tr>
<td>3</td>
<td>Not all requirements met (negotiation required)</td>
</tr>
<tr>
<td>2</td>
<td>Many requirements not met (letter required)</td>
</tr>
<tr>
<td>1</td>
<td>Confrontation</td>
</tr>
</tbody>
</table>

Table 4. Supplier Evaluation Rating Definitions.

The completed SER's are returned to the Quality System Manager who inputs all the data onto a database. The data is then sorted alphabetically by supplier, and also by material, and printed out for distribution to all Contracts Managers, Site Managers and Buyers. An illustration of the Supplier Evaluation Data Report is shown in figure 45 (91).
SUPPLIER EVALUATION DATA FOR (month and year stated)
SORTED BY MATERIAL

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>SUPPLIER</th>
<th>SOURCE</th>
<th>NAME</th>
<th>NO A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>COMMENT</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLOCKS</td>
<td>ZX LTD</td>
<td>LONDON WING</td>
<td>1122</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>OK</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>CEMENT</td>
<td>OK PLC</td>
<td>LUTON BARR</td>
<td>2233</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>GOOD</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>CONCRETE</td>
<td>A1 LTD</td>
<td>FROME THOM</td>
<td>3456</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>V GOOD</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>GENERAL</td>
<td>CD PLC</td>
<td>DOVER DEAN</td>
<td>6789</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>POOR</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>KERBS</td>
<td>AA PLC</td>
<td>CORBY READ</td>
<td>0987</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>QUICK</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>PAVING</td>
<td>QA LTD</td>
<td>OXFORD MANN</td>
<td>5671</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>AVERAGE</td>
<td>73</td>
<td></td>
</tr>
</tbody>
</table>

Figure 45. Supplier Evaluation Data Report.

The report shown above illustrates the material; the material supplier; the source (location) of the supplier; the name of the Site Agent who completed the report; the contract number; the performance ratings for the criteria discussed; a brief comment, and an overall performance percentage calculated as an average from the six criteria (A to F).

The overall results from the report illustrated in figure 45 are then compiled into a Supplier League Table which groups suppliers under the following categories (92):-

(i) 'A' Grade Suppliers. These are suppliers whose performance has averaged at above eighty percent.
(ii) 'B' Grade Suppliers. These are suppliers whose performance has averaged at above seventy, but not above eighty, percent.
(iii) 'C' Grade Suppliers. These are suppliers whose performance has averaged at seventy percent or less.

The performance categories defined above were developed by the writer after monitoring the number of suppliers appearing within the different categories over several months. A modification of the categories took place (i.e. the percentage requirements) after this monitoring period in order to develop a league table which displayed a normal distribution through the three defined grades. As a consequence the distribution of suppliers appearing under each grade is as follows (92):-

(i) 'A' Grade Suppliers. Twenty percent of the total number of suppliers evaluated appear under this grade.
(ii) 'B' Grade Suppliers. Sixty percent of the total number of suppliers evaluated appear under this grade.
(iii) 'C' Grade Suppliers. Twenty percent of the total number of suppliers evaluated appear under this grade.
The Subcontractor Evaluation System was established by the author using the same methodology as for the Supplier Evaluation System discussed earlier in this section, however due to the greater input provided by a subcontractor into the works than for a material supplier, the following were defined as the evaluation criteria (93):

(i) Price.
(ii) Availability.
(iii) Resources: (1) Labour.
(2) Material.
(3) Plant.
(iv) Quality: (1) Labour.
(2) Material.
(3) Finishes.
(v) Site supervision.
(vi) Time keeping.
(vii) Safety.
(viii) Workmanship.
(ix) Wastage.
(x) Ability to meet programme.
(xi) Relationship.
(xii) Contractual awareness.

The Subcontractor Evaluation Report (SCER) was designed in the same way as the SER illustrated in figure 44, however it includes the criteria listed above for evaluation on a one to five basis. The completed SCER's are input onto a database on a similar basis to that illustrated in figure 45, and a Subcontractor Evaluation Data Report is then produced. The evaluated subcontractors are then divided into 'A', 'B' and 'C' grades under the categories as described for suppliers. SCER's are completed at quarterly intervals in order to allow sufficient time for the Site Agents to evaluate individual subcontractors' performances.

The Supplier and Subcontractor Evaluation System discussed in this section satisfies the requirements of BS 5750 Part Two, since it enables the Company to select suppliers and subcontractors on the basis of records of previously demonstrated capability and performance (56). This system also provides an 'active' evaluation procedure for all suppliers and subcontractors, since all data is updated at regular intervals as discussed. Critical selection information is then provided to the Buyers, and as a consequence suppliers and subcontractors can be selected on the basis of a demonstrated ability to meet specified standards.
5.4.4 Defining Requirements

The Company Procedures Manual defines a Material Requisition Procedure which allows authorised site staff to order materials through the appointed Buyer. The procedure was developed by the author in conjunction with relevant staff (i.e. Buyers and Site Agents), and is as follows (82):

(i) Prepare Material Requisitions by abstracting requirements from drawings and studying the contract details.

(ii) Where necessary requisitions shall set out:

- Requisition number.
- Site name.
- Date.
- Material specification and quantity.
- Required delivery date.
- Any special conditions, including quality assurance requirements and details of relevant certification required inclusive of Certificates of Conformity.
- Any particular requirements for handling, protection or storage.
- Reference to the appropriate Bill of Quantities item.

(iii) Authorise the requisition by signature.

(iv) Check all the required information is set out and any necessary attachments are present.

On receiving the requisition the Buyer completes a Purchase Order which is defined in the Procedures Manual as containing the following information (82):

(i) Data, clearly describing the product.
(ii) Contract number.
(iii) Delivery address and telephone number.
(iv) Supplier's name, address and telephone number.
(v) Supplier's quotation reference number.
(vi) Date of order.
(vii) Number/quantity of item(s).
(viii) Price of every item.
(ix) Description of materials.
(x) Department office address.
(xi) Reference to any British/International Standards.
(xii) Reference to any specification or technical instruction.
(xiii) Type, class, style or other precise identification.
(xiv) Details of required certification or documentation.
(xv) Details of labels or markings required.
(xvi) Off-loading instructions.
(xvii) Discount factors.
(xviii) Particular requirements for handling, protection or storage.
(xix) Part load or other charges.
(xx) Any quality assurance requirements.

The Purchase Order clearly duplicates information from the Material Requisition, as well as adding additional information as shown. This procurement system ensures that the material or product satisfies the specification, and it also allows for a secondary check as key data is transferred from the requisition to the order. The purchasing information used by the Company completely satisfies the requirements set down in BS 5750 Part Two, as discussed in section 3.6.4.

Subcontractor orders also define a relevant specification for the work they are employed to carry out, and this is included in the relevant contract documents passed to the subcontractor. There is also a direct reference made to the specification in the Subcontract Form of Agreement issued to all subcontractors, where the following is stated:–

'Unless otherwise stated in the specification for the project all workmanship is to be in accordance with the recommendations of the latest relevant British Standard Code of Practice.'

The clause shown above is defined by the Company, and provides a clear statement to the subcontractor that a standard of workmanship (ie. either the specification or a relevant British Standard), must be worked to. There is no direct statement regarding specification in the Procedures Manual for placing the subcontract order, and this would benefit from greater emphasis in view of the requirements of BS 5750 Part Two.

The purchase order system within the Company directly matches that illustrated in figure 14, and as discussed, agrees with the requirements defined in BS 5750 Part Two.
5.5 THIRD PARTY CERTIFICATION

5.5.1 Certification Bodies

The writer approached the three main construction industry certification bodies, as described in section 3.7. The recognised industry bodies are the British Standards Institute (BSI), Lloyd's Register Quality Assurance (LRQA) and SGS Yarsley Quality Assured Firms (Yarsley).

The common approach to communicating with the bodies was for a representative to visit the Company's premises in order to discuss the certification requirements with the author. Following this discussion, a questionnaire was completed by the writer and this was used by the body to assess certification costs, together with a certification programme.

The questions included on all questionnaires covered similar areas, and BSI's Questionnaire in particular required detailed input as shown below (95):

(i) The number of employees within the Company, with a breakdown of the number in the administration, production (i.e. site), and quality departments.
(ii) A list of all premises within the Company contributing to the overall scope of registration (e.g. the head office and area offices).
(iii) Details of any approvals granted by other certifying bodies (e.g. the Ministry of Defence or British Gas).
(iv) Details of any Trade Associations of which the Company is a member (e.g. the Federation of Civil Engineering Contractors).
(v) A description of the products, processes and/or services which it is intended to include within the scope of registration. For example the Company's scope was defined as, 'contracting services to the public and private sectors of industry of a building and civil engineering nature'.
(vi) A description of the business activities with which the firm is involved, (eg. construction, including building and civil engineering).
(vii) Details of specific plant or equipment used.
(viii) Details of the quality system, for example the time since implementation, or the date on which it will be fully implemented.
(ix) Registration requirements, for example the particular British/International Standard.
(x) The date of required registration.

It should be noted that the term 'registration' is used because on obtaining certification, the firm becomes registered to the relevant Standard.
5.5.2 Certification Programme and Costs

On the basis of the information included in the completed questionnaires, as discussed in section 5.5.1, the individual certification bodies submitted a quotation and programme for certification.

BSI submitted a proposal which defined the following costs as illustrated in table 5 (96):

<table>
<thead>
<tr>
<th>OFFICE/SITE</th>
<th>APPLICATION £</th>
<th>ASSESSMENT £</th>
<th>TOTAL £</th>
<th>VAT INC £</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Office (admin., operations, surfacing)</td>
<td>837.40</td>
<td>2862.00</td>
<td>3699.40</td>
<td>4346.80</td>
</tr>
<tr>
<td>Office 1 INC</td>
<td>1902.70</td>
<td>1902.70</td>
<td>2235.67</td>
<td></td>
</tr>
<tr>
<td>Office 2 INC</td>
<td>1902.70</td>
<td>1902.70</td>
<td>2235.67</td>
<td></td>
</tr>
<tr>
<td>Office 3 INC</td>
<td>1446.90</td>
<td>1446.90</td>
<td>1700.11</td>
<td></td>
</tr>
<tr>
<td>Office 4 INC</td>
<td>1446.90</td>
<td>1446.90</td>
<td>1700.11</td>
<td></td>
</tr>
<tr>
<td>OVERALL TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>12218.36</td>
</tr>
</tbody>
</table>

Table 5. Certification Costs Proposed by BSI.

The costs shown in table 5 are not fully ratified by BSI until they the Company has paid the non-refundable application fee and submitted its Quality Manual for assessment. Assessors' expenses (eg. travelling) also have to be met by the firm. Annual certification fees are also charged for the whole Company at £1,145.86, and routine surveillance charges are made at approximately £300.00 per day per assessor (plus expenses). The number of days surveillance per year are not clearly stated by BSI, (although it is stated that it will be a minimum of four days per annum [97]), and consequently it is not possible to budget for the total on-going certification costs.

LRQA provided two options for assessment on their estimate which was based on a Company visit and the completion of a questionnaire. The two options were as follows (98):

(i) Assessment of Head Office Only. This would involve an assessment of the administration function, the operational (ie. construction ) function, and the surfacing function operating from the Head Office location. The process would be as defined in section 3.7.3, and would incur costs of £523.00 for application and £4,406.00 for assessment.
The total costs would therefore be £4,929.00. To add the remaining four area offices at a later date would cost a total of £4,935.00 for the largest two offices, and a total of £3,525.00 for the remaining two offices where fewer staff operate. To certify the whole Company on this basis would cost a total of £13,389.00

(ii) Assessment of the Whole Company. To cover all the areas described in (i) the application fee would cost £523.00, and the assessment fee would cost £11,016.00. This produces a total fee of £11,539.00, which represents a saving of £1,850.00

LRQA state that they will carry out twice-yearly surveillance visits of three days per visit for the whole Company. They do not state the cost per visit, and expenses are charged separately.

Yarsley also provided two options for assessing the whole Company, however these options are aimed at cost control rather than assessing different parts of the Company at different times. The options stated are illustrated in tables 6 and 7 as follows (99):

(i) Option 1 (Table 6). Paying Fees When Due.

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application fee</td>
<td>450</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment fee</td>
<td>3,025</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surveillance fee</td>
<td>1,100</td>
<td>1,100</td>
<td>550</td>
</tr>
<tr>
<td>Totals</td>
<td>4,575</td>
<td>1,100</td>
<td>550</td>
</tr>
</tbody>
</table>

OVERALL TOTAL FOR YEAR 1 = £5,376 (inc VAT)

(ii) Option 2 (Table 7). Spreading the Cost Over the Three Year Certification Period.

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application fee</td>
<td>450</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment/ Surveillance fee</td>
<td>2,117</td>
<td>2,117</td>
<td>2,117</td>
</tr>
<tr>
<td>Totals</td>
<td>2,567</td>
<td>2,117</td>
<td>2,117</td>
</tr>
</tbody>
</table>

OVERALL TOTAL FOR YEAR 1 = £3,016 (inc VAT)
The Yarsley assessment programme states that the Head Office would be assessed, together with one area office and two construction sites (99). The body stated that it would not be necessary to assess all area offices within the Company at the initial assessment because a common Procedures Manual applies to all offices. Additional offices would be assessed during the on-going surveillance programme.

A summary of the assessment quotations from all the bodies discussed is shown in table 8.

<table>
<thead>
<tr>
<th>BODY</th>
<th>APPLICATION</th>
<th>ASSESSMENT</th>
<th>SURVEILLANCE</th>
<th>TOTALS (1)</th>
<th>TOTALS (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSI</td>
<td>984</td>
<td>11234</td>
<td>2400 approx.((4 \text{ days } \times \£300/\text{day } \times 2 \text{ assessors}))</td>
<td>12218</td>
<td>14618 est.</td>
</tr>
<tr>
<td>LRQA</td>
<td>523</td>
<td>11016</td>
<td>Not defined</td>
<td>11539</td>
<td>?</td>
</tr>
<tr>
<td>Yarsley</td>
<td>529</td>
<td>3554</td>
<td>1293 year 1</td>
<td>4083</td>
<td>5376</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1293 year 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>646 year 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total (1) = Application Fee + Assessment Fee
Total (2) = Total (1) + Surveillance Fee (where defined or estimated)

All costs illustrated are for assessment of the whole Company in one period.

Table 8. Summary of Assessment Quotations.

The results displayed in table 8 illustrate the variability in certification costs, and the importance of agreeing these with the body before a contract is agreed. The certification programme defined by the body appears to have the greatest bearing on costs, and this is highlighted through the Yarsley quotation which is approximately one third of the other totals for application and assessment.

On the basis of the analysis discussed, the writer recommended that Yarsley were selected for carrying out the certification programme. This selection was based upon the competitive quotation, as well as the helpful and understanding manner in which the representative from Yarsley demonstrated a clear understanding of the operation and organization of the construction sector.
5.6 QUALITY COSTING

5.6.1 Introduction

The Company does not operate any form of quality costing system, and the development of such has not been an objective in the introduction of a quality management system. However, as part of the research conducted for this thesis, the author has attempted to establish some of the more readily retrievable quality costs as defined in section 3.8. The costs were established through discussions with two senior managers and the Financial Controller, and are based on the foregoing work.

5.6.2 Prevention Costs

Based on the points defined in section 3.8.2, the following prevention costs can be estimated within the Company:

(i) Quality training. All staff are exposed to one day's quality training per year. The approximate costs for this activity are as follows:

- Average salary cost/day = £50.00
- 86 staff per year x £50.00 = £4,300.00
- Room hire/day = £200.00
- 10 days required per year x £200.00 = £2,000.00
- Trainer (internal)/day = £100.00
- 10 days training x £100.00 = £1,000.00
- Documentation etc. @ £2.00/person = £172.00

TOTAL £7,472.00

(ii) Supplier and subcontractor assessment. The consistent cost to the Company is the operation of the Supplier and Subcontractor Evaluation Systems. The approximate costs for this activity are as follows:

- 2 days/month for Quality System Manager to compile information and produce report.
- 2 hours/month for 25 Site Agents to complete reports
- Documentation @ £2.00/report

\[
\begin{align*}
\text{2 days/month for} & \quad 2 \times £70.00/\text{day} = £1,680.00 \\
\text{Quality System Manager to compile information and produce report.} & \quad \times 12 \text{ months} \\
\text{2 hours/month for} & \quad 2 \times £9.00/\text{hour} = £5,400.00 \\
25 \text{ Site Agents to complete reports} & \quad \times 12 \text{ months} \\
\text{Documentation} & \quad 12 \text{ mnths} \times £2.00 \\
@ £2.00/report & \quad \times 30 \text{ copies (SER)} \\
\text{4 quarters} & \quad \times £2.00 \\
\text{x 30 copies (SCER)} & \quad + 4 \text{ quarters} \times £2.00 \\
\text{TOTAL} & \quad £8,040.00
\end{align*}
\]

TOTAL £8,040.00
Note that the SER's are produced each month and distributed to all Site Agents and Buyers, whereas the SCER's are produced each quarter and issued to the same staff.

(iii) Audits. The Internal Auditing Programme was established as discussed in section 5.2.5. Five members of the Internal Auditing Team were programmed to carry out one day's auditing per month. The costs associated with this programme approximate as follows:

- **5 auditors**  
  \[5 \times £120.00/\text{day} = £7,200.00\]  
  @ 1 day/mnth x 12 mnths

- **Follow-up**  
  \[5 \times £60.00/0.5 \text{ day} = £3,600.00\]  
  @ 0.5 day/mnth x 12 mnths

- **Preparation/report writing**  
  \[5 \times £60.00/0.5 \text{ day} = £3,600.00\]  
  @ 0.5 day/mnth x 12 mnths

- **Documentation**  
  \[5 \times £2.00/\text{audit} \times £2.00\]  
  @ £2.00/audit

- **Auditees' time**  
  \[5 \times £80.00/\text{day} = £4,800.00\]  
  @ 1 day/mnth x 12 mnths

**TOTAL** \( £19,320.00 \)

(iv) Quality engineering. The Company should produce Quality Plans for all projects as part of its quality system, and this will include works procedures (or method statements) and checklists. Although the Quality Plan is an 'active' document on any contract since it is revised as necessary, the initial compilation of the plan is the most time consuming element. If twenty contracts per year are started, twenty Quality Plans are compiled. A Site Agent may spend approximately one day on producing the plan. The associated cost can therefore be approximated as follows:

\[20 \text{ plans} \times 1 \text{ day} \times £80.00/\text{day} = £1,600.00\]
The total annual prevention costs can therefore be approximated as illustrated in table 9.

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>TOTAL (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality Training</td>
<td>7472</td>
</tr>
<tr>
<td>Supplier &amp; Subcontractor</td>
<td>8040</td>
</tr>
<tr>
<td>Assessment</td>
<td>19320</td>
</tr>
<tr>
<td>Auditing</td>
<td></td>
</tr>
<tr>
<td>Quality Engineering</td>
<td>1600</td>
</tr>
<tr>
<td><strong>OVERALL TOTAL</strong></td>
<td><strong>36432</strong></td>
</tr>
</tbody>
</table>

Table 9. Summary of the Estimated Prevention Costs.

5.6.3 Appraisal Costs

This area of quality costing within the Company clearly incurs specific costs, however they are not recorded or easily identifiable. The following points however attempt to approximate some of the costs highlighted in section 3.8.3:

(i) Test and inspection. The Company carried out a sewage main installation contract valued at £100,000, and the main testing activity was a pipeline pressure test costing approximately £500.00 (or 0.5 percent of the value). The Chief Estimator stated that he would aim to keep testing and inspection costs to no more than three to four percent of the contact value. If the Company carried out a total of £16M of contracts in one year, and the testing and inspection activities totalled 1.5 percent of the overall value, this quality cost would be £240,000, rising to £480,000 if the testing and inspection activities represented three percent of total contract values.

(ii) Maintenance and calibration. The Company has a contract with a specialist construction measuring equipment maintenance organization, who are paid £5,000 per annum to maintain and service all levels and theodolites.

(iii) Test equipment depreciation. The test equipment is written down in the Company's accounts as a fixed asset of £20,000. The equipment is not depreciated from year to year, as most items have been owned for a considerable period, and any depreciation is now insignificant. The purchase of any major items would require allowance for depreciation, however this event rarely occurs in this case.
The overall appraisal costs are difficult to estimate for a yearly period, however from this study they would approximate as shown in table 10.

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>TOTAL (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test &amp; Inspection</td>
<td>240000</td>
</tr>
<tr>
<td>Maintenance &amp; Calibration</td>
<td>5000</td>
</tr>
<tr>
<td><strong>OVERALL TOTAL</strong></td>
<td><strong>245000</strong></td>
</tr>
</tbody>
</table>

### 5.6.4 Failure Costs

This is possibly the most poorly defined and monitored area of quality costing within the Company, however potentially the most easily calculable if failures were recorded.

On average the Company will allow for two to three days at the end of each contract for carrying out rework. An average cost for this is not calculable, since the failure of the product dictates the cost involved. A reject list from an actual contract (known as a 'snagging list') was provided by a Contracts Manager for this study, and it includes the following failures as shown in table 11:-

<table>
<thead>
<tr>
<th>FAILURE</th>
<th>COST (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All window heads (arches) are unacceptable.</td>
<td>500.00</td>
</tr>
<tr>
<td>Staining on sections of brickwork.</td>
<td>20.00</td>
</tr>
<tr>
<td>Sections of brickwork require repointing.</td>
<td>150.00</td>
</tr>
<tr>
<td>Protruding damp proof course.</td>
<td>50.00</td>
</tr>
<tr>
<td>Clean slabs of cement marks.</td>
<td>20.00</td>
</tr>
<tr>
<td>Re-mastic expansion joints.</td>
<td>20.00</td>
</tr>
<tr>
<td>Correct uneven brickwork (not perpendicular).</td>
<td>1000.00</td>
</tr>
<tr>
<td><strong>OVERALL TOTAL</strong></td>
<td><strong>1760.00</strong></td>
</tr>
</tbody>
</table>

Table 11. An Example of Actual Failures and Their Associated Rectification Costs.
The example of failure costs shown in table 11 provides a brief guide to the costs incurred, however the costs shown are approximate and were verbally quoted by the Contracts Manager.

A formal system of monitoring the snagging lists, and determining accurate costs for the rectification of the failures would provide a major source of quality costing information.

5.6.5 External Quality Assurance Costs

According to Lock and Smith's definition of external quality assurance costs (49) as discussed in section 3.8.5, the Company's main costs are associated with its intention to obtain certification to BS 5750 Part Two. The costs involved with this objective are discussed in section 5.5.2, and total approximately £6,000 at the lowest to £15,000 at the highest in the first year of certification.

Feigenbaum's suggestion of external quality assurance costs (51), as discussed in section 3.8.5, includes warranty complaints and correction of defects, which as discussed in section 5.6.4 is not monitored and recorded within the Company's systems.

5.6.6 Total Quality Costs Estimated from this Study

On the basis of this costing analysis, it can be identified that the most poorly monitored area exists around failure costing, and the example shown in section 5.6.4 cannot be used as an annual costing approximation. As a consequence the total costs shown below (table 12) for this section do not include failure costs, only prevention, appraisal and external costs.

<table>
<thead>
<tr>
<th>COST CATEGORY</th>
<th>ESTIMATE (Annual) (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention</td>
<td>36432</td>
</tr>
<tr>
<td>Appraisal</td>
<td>245000</td>
</tr>
<tr>
<td>External</td>
<td>15000</td>
</tr>
<tr>
<td>OVERALL TOTAL</td>
<td>296432</td>
</tr>
</tbody>
</table>

Table 12. Summary of Prevention, Appraisal and External Quality Costs.
If the Company employed a full-time Quality System Manager, earning a salary of £18,000 per annum, together with a car provided at a cost of £3,000 per annum, the overall cost shown in table 12 would exceed £317,000 per annum. This total represents two percent of turnover for the Company under study, which has an annual turnover of £16 million. In this situation there is a clear benefit in assessing failure costs, since a reduction in failure costs through the operation of a quality system could justify the prevention, appraisal and external quality costs shown.
5.7 CHAPTER SUMMARY

The research into the Company's quality system, as discussed in this chapter, has highlighted the following points:-

(i) The development and management of the quality system was largely carried out by the author who was not an employee of the Company. As a consequence his level of authority was minimal, although the introduction of the system was clearly supported by the Company Chairman and later by the Joint Managing Director.

(ii) A significant amount of staff training was carried out as part of the introduction of the system, however this training was unstructured and did not follow the Training Cycle defined in section 2.7.1.

(iii) The Internal Auditing Programme and procedures closely match the model suggested in chapter three, however following a reduction in the staffing level within the Company, the manpower has not been available to continue this programme.

(iv) The Company Quality Policy compares very closely with the suggested models in section 3.5.2.

(v) The Quality Manual satisfies the recommendations laid down by Lock and Smith (49), however it is not used as a tool for integrating new staff as suggested by Ashford (55).

(vi) The Procedures Manual has been established around functional departments within the Company, and as a consequence it reflects actual practice, as required. The manual also addresses all clauses within BS 5750 Part 2 (other than statistical techniques which are not applicable to the Company's operations).

(vii) The Quality Plan matches closely the recommendations discussed in section 3.5.5, however it does not reference the Site Diary (as recommended by Feigenbaum [51]) or the Procedures Manual in detail. The plan also omits any reference to contract auditing.

(viii) The Supplier and Subcontractor Assessment Questionnaires provide the basis for pre-assessment, however the Company does not carry out second party audits as discussed in section 3.6.2, and as a result its assessment system does not provide detailed information.
(ix) The Supplier and Subcontractor Evaluation System is comprehensive, and clearly satisfies the requirements set down in BS 5750 Part Two.

(x) The Purchase Order System for suppliers matches the model discussed in section 3.6.4, however more detail could be placed on purchasing subcontractors in the Procedures Manual, in order to clearly satisfy BS 5750.

(xi) Certification costs are highly dependent upon the certification body and its proposed assessment programme.

(xii) The Company does not operate a formal Quality Costing System, and as a result any figures shown in chapter five are approximate. The example costing exercises carried out in this chapter do indicate the need for establishing a costing system, as the quality costs can be significant.

This chapter has been based on the work carried out by the author over a two year period whilst developing and ultimately managing the quality system in a company which previously had no formal procedures or working knowledge of quality management. As a result the system has been well validated by its incorporation into accepted procedures and continual use over an eighteen month period.

The quality system is now well established and seen as beneficial to the management of the Company by the Board of Directors and senior managers. Site Agents have accepted the concept of Quality Planning, and have clearly seen an added benefit to this element of the system as the production of method statements and checklists is required by an increasing number of clients (eg. particularly local authorities, water companies and some major management contractors). The Supplier and Subcontractor Evaluation System has been used in the purchasing function of the Company, and where suppliers have been informed of examples of poor performance, clear improvements have been seen in following evaluations.

The requirement in BS 5750 for the implementation of a training procedure highlighted the need within the Company to formalise and expand this area. This generated within the directors and senior managers an interest in the wider issues of HRM, which ultimately led to the author studying HRM systems and procedures in detail.

The Procedures Manual is now seen within the Company as a key element of the Company's overall management systems, and the manual is now revised in the appropriate sections whenever a reorganization or procedural change takes place.
The directors and senior managers place a great emphasis upon the maintenance of this document, which in itself is seen by the writer as a measure of the commitment to the quality system.

Not all employees were initially supportive of the changes required for introducing a quality system, in particular the introduction of formal procedures for key functions within the organization. Many felt that it would reduce flexibility, and remove the ability for staff to use their initiative and flair. The running of the system for a considerable period, together with the training and familiarisation of all staff involved, has resulted in an attitude change amongst many of the initially less supportive employees; this has been demonstrated through improved completion of quality documentation (eg. SER's and SCER's), together with a generally more positive attitude towards cooperation.
6. CONCLUSIONS

6.1 Overview

This research has established the current theoretical and 'best practice' approaches to the two management areas studied; human resource management (HRM) and quality management. Based on the initial research included in Chapters Two and Three, this thesis then compares the actual systems in place within the contracting organization with the theoretical models. On the basis of this comparison, Chapters Four and Five provide conclusions based on the research carried out. This chapter expands upon the conclusions drawn to provide recommendations for 'best fit' HRM and quality management systems within a contracting organization of the type studied.
6.2 HUMAN RESOURCE MANAGEMENT

6.2.1 Recruitment and Selection

The Company does not currently operate a formal recruitment and selection procedure, and as a result cannot be assured of appointing the most suitable applicants to vacancies. Consequently the development of standard job descriptions linked to relevant person specifications would provide the basis for establishing the key information for each position. As part of the introduction of a quality system, job descriptions have been produced by the author in liaison with relevant staff, and as a result the basic information has been defined for each position within the Company. Once the person specifications have been defined, the development of standard job advertisements can be considered in order to meet the shortfall in detail in current advertisements placed, as discussed in section 4.2.4.

The structured process of recruiting applicants requires the understanding of the managers involved in the process. There is a need within the organization to train those managers involved in recruitment and selection in order to harmonise the staffing structure and culture across the Company.

The Company's application form discussed in section 4.2.5 is comprehensive, however there is no facility to include next of kin, marital status, or the source of information for the vacancy. There is therefore a requirement to modify the form to provide the key information required for the personnel records.

The recruitment and selection flowcharts illustrated in section 4.3.1, indicate the need to review and modify the Company's current system, and a suggested system, developed by the writer, is illustrated in figure 25. Essentially the need is highlighted to establish a formal procedure which is common for all recruitment and selection, in order to satisfy the models suggested in sections 2.2 and 2.3.

To formalise the selection process further, the interviewing procedure followed by the Company's managers is unstructured, and this further highlights the need for training in this area. The use of an Interview Planning and Record Form, as compiled by the author and illustrated in figure 26 (section 4.3.2), would also assist the interviewers in planning the interview, and consequently help to satisfy Hollier's point that 'a good interviewer will control an interview' (15).

The development of a Company Employment Offer Letter, as discussed in section 4.3.3, would remove the variation encountered through various managers producing their own offer letters.
6.2.2 Induction

The Induction Manual provides the core information for operating the induction programme, however there are a number of modifications required to the manual and the procedures therein, to improve the system.

The induction procedure suggests that each new employee will have a five year training programme developed after only two weeks employment. This is clearly an over ambitious aim, since the employee's strengths and weaknesses would not have been precisely defined after such a short period. As a consequence, the induction programme has fallen into abeyance, and is not in full operation due to lack of management commitment.

The Induction Manual is in itself partly developed for new staff for their information, however it also contains procedures, guidelines and points for discussion for managers implementing the system. The manual therefore appears unclear and confused in its presentation; the procedures should be contained solely within the Procedures Manual and the recording forms and staff information should be contained within the Induction Manual. The manual therefore requires revision.

The induction procedure does not refer to moving employees through the Company to gain exposure and experience in other departments. This is a valid induction experience, as suggested by Tyson and York (6), as discussed in section 2.4.1, and should be incorporated where possible into the Company's induction programme.

There is also no reference to the social adaptation of new employees into the organization, and this may be a reflection of the construction industry culture where there is clearly a minimal emphasis on this element of HRM, however the introduction of formal procedures assists in emphasising areas for development and change.

6.2.3 Pay and Benefits Management

The Company has a defined grading system (from one to seven), and the analysis in section 4.5.4 illustrates that the grade only clearly defines the car allowance, and not the salary level. The salary structure is highly flexible, and the study shows that there is no formal structure against which staff are rewarded. The salary scale diagram produced would suggest that the directors should consider a revision of their reward management approach, as this would simplify the payment structure and would enable staff to understand where they are placed on the scale. Any degree of inequity would be reduced or removed through a more formal approach, and this in turn can lead to increased motivation or satisfaction when staff understand their position on the salary scale.
The Profit Share Scheme can substantially increase an employee's income when profit is generated, as shown in the example calculation shown in section 4.5.5. However there is no example of the potential gains from this scheme in the Staff Handbook, and consequently any potential benefits from increasing motivation through this scheme may not be realised.

6.2.4 Performance Evaluation

The Company does not operate a formal performance evaluation system, and the reasons for this are discussed in section 4.6. It is apparent when studying the reasons for failure of the Company's initial appraisal system, that the key reasons were because there was no formal HRM system in place. The reasons for failure are stated, for example, a lack of management and staff training, no job descriptions and a confusing and emotive link to a salary reward (the basis of which is also unstructured). It can be concluded, therefore, that a performance evaluation system requires a formal HRM system to work within, if it is to operate successfully.

6.2.5 Training and Development

The Company has developed, through its Board of Directors, a comprehensive Training Policy, as shown in figure 31 (section 4.7.1), and the Procedures Manual details a comprehensive training procedure covering all areas of staff development.

Unfortunately both the policy and the procedures do not accurately reflect actual practice, and this is a fundamental requirement of the Procedures Manual. The overall problems with the Company's training activities are highlighted in section 4.7.3, which discusses how the Training Cycle is not satisfied for all training programmes. This analysis illustrates the need for the Training Policy and procedures to be reviewed, in order that they should satisfy the requirements of BS 5750 and reflect actual (as opposed to desired) practice.

6.2.6 Employment Law

The Company's Staff Handbook is an extremely comprehensive document which satisfies the main needs of employment legislation requirements, however the main concern is that the booklet is not issued to many members of staff and consequently the Company does not comply with legislative requirements under such circumstances.
This problem indicates the absence of a formal HRM system, together with a lack of allocated responsibility for key elements of such a system. The development and introduction of relevant procedures, together with clear staff responsibilities in this area, would assist in removing this significant problem.

6.2.7 The Collection and Use of Personnel Information

Through the development of an employee database, the author began to formalise the employee records. The next phase involved the development of personnel forms shown in figures 36 to 38, which assisted the responsible staff to improve the employee recording system.

The most significant problem with the current personnel records resulted from the method of maintaining training records with confidential personnel information, and this would clearly be unsuitable for auditing purposes by a third party. The recommendation was therefore made to separate personal (confidential) information from training records, and the new forms were designed to fulfill this aim. Personnel records are also not tightly controlled (eg. training records are not always updated), and the new forms were designed to encourage an improvement in this area.

6.2.8 Summary

The effective management of the human resources within an organization such as the type studied depends upon the implementation and operation of key elements of an HRM system. From this research, these key elements can be drawn from the conclusions discussed in sections 6.2.1 to 6.2.6, and are as follows:-

(i) Compile job descriptions and person specifications for all staff positions.
(ii) On the basis of the information generated from (i), develop standard job advertisements.
(iii) Train staff involved in the recruitment and selection process with the key skills required (eg. interviewing) to reduce the element of subjectivity involved in the process.
(iv) Develop procedures (eg. in the form of a flowchart discussed) to define the recruitment and selection process.
(v) Develop specific documentation around the procedures defined in (iv), to assist in the recording and evaluation of information in the selection process (eg. a standard application form, an interview planning and record form and a standard offer letter).
(vi) Develop an induction programme for all new staff, ideally defined in an Induction Manual. Ensure that the programme addresses the areas of training requirements, work experience or exposure to other departments, and social adaptation.

(vii) Ensure that salaries are defined by reference to a scale system. This assists in managing rewards, allows staff to understand the potential salary progression, and reduces the problem of inequity. This in turn should increase the level of motivation generated through the reward system.

(viii) Ensure that incentive schemes (e.g., a profit share scheme) are clearly defined and understood by staff who can potentially gain from the additional reward.

(ix) Implement a performance evaluation system only when the foundations of the HRM system have been established (as discussed in section 6.2.3).

(x) For all training provided to staff, follow the Training Cycle. This ensures that the training need is defined, that a suitable method of training has been planned, and that the benefits of the training are assessed. In this way training needs become more precisely defined.

(xi) All employees must be issued with conditions of employment in order to comply with employment legislation, and all staff should be made aware of the company rules and procedures relating to HRM.

(xii) Maintain detailed personnel records, divided into confidential and non-confidential files. Implement a record system (e.g., on the basis of forms or a computer database) to maintain up to date information.

The overall themes arising from the conclusions summarised in this section are as follows:

• DEFINE AND IMPLEMENT PROCEDURES FOR KEY ELEMENTS OF THE HRM SYSTEM.
• RECORD ALL KEY INFORMATION IN A PERSONNEL RECORDS DATABASE.
• OPERATE WITHIN THE EMPLOYMENT LEGISLATION.
• TRAIN ALL MANAGERS AND STAFF TO OPERATE THE SYSTEM.
• DEVELOP THE SYSTEM AS REQUIRED.
6.3 QUALITY MANAGEMENT

6.3.1 Management Responsibility

The author was responsible for development of the elements of the quality system discussed in Chapter Five. He was not a direct employee of the Company, and as a result experienced some problems through lack of authority; for example some more sceptical employees were less likely to cooperate with completing new documents for an 'outsider' to the organization with no authority. The support from the Company Chairman did, however, reduce this problem to an insignificant level, as all employees understood his firm commitment to the introduction of a quality system. This support was therefore seen as vital to the success of the implementation by the author.

The structure of the management committee to oversee the introduction of the quality system provided a valuable forum for idea generation, support and guidance for the management of the change which took place in the organization.

The training element for the introduction of the system was fundamental to its success, however it would have been more productive and controlled had the methodology of the Training Cycle been adopted.

The auditing programme was the final requirement in the introduction of the system, which has benefits in assessing the accuracy of the procedures and the commitment and understanding of the employees. As a result internal auditing is fundamental to the success of the system, and as a consequence the cessation of the programme was extremely unfortunate.

6.3.2 Documentation

The procedures developed for the Procedures Manual should reflect the functions within the organization, and as a result the procedures should be based around functional departments. It is fundamental that the procedures should reflect actual as opposed to desired practice, and there was a tendency for some senior managers within the Company to write procedures which they wanted to see in place, rather than what was actually happening. In this way some managers felt they could change undesirable practices through the introduction of new written procedures which their staff had no input in developing - the first time the change in procedure would be noticed would be if the employee read the procedure or if they were identified as not complying through an audit. The author had therefore to emphasise to these particular managers that if procedures required revision, they should be discussed with relevant staff who complete the tasks, and who could agree and be aware of the changes.
The Procedures Manual should not simply include the organizational procedures, but also the requirements of BS 5750, and as a consequence a check against the Standard must take place as illustrated in table 3 (section 5.3.3).

The Quality Plan should reference the Procedures Manual where appropriate, for example in the case of suppliers which are listed in the plan and selected on the basis of procedures defined in the manual. The Quality Plan must be applied to all contracts, however it can be abbreviated for smaller value contracts.

6.3.3 Procurement

The Supplier (Vendor) and Subcontractor Assessment Questionnaires provide the basis for pre-assessment of unknown suppliers and subcontractors, however the use of a second party auditing programme would supplement this information. Second party auditing (perhaps of only suppliers providing a significant value of materials) would enable the Company to assess their capabilities to satisfy requirements, but it would also demonstrate to the supplier the Company's (ie. the customer's) commitment to achieving quality.

The Supplier and Subcontractor Evaluation System provides the basis for the evaluation of suppliers and subcontractors. The system provides an 'active' and on-going method of monitoring the performance of suppliers and subcontractors, which in turn can provide the basis for improving the performance of both the customer (ie. the Company) and the supplier. The prolonged use of this system (over an eighteen month period) has provided a basis for its validation, and it has proved of substantial benefit and interest to Buyers, Site Agents and managers.

The Purchase Order System discussed in section 5.4.4 matches the requirements for supplier ordering as discussed in section 3.6.4, however there is a less detailed procedure for specifying subcontractors. In view of the requirements of BS 5750 the procedure for specifying materials should closely resemble the procedure for specifying subcontractors, and in this case the difference is marked. A revision of the subcontractor ordering procedure is therefore necessary.

6.3.4 Third Party Certification

The certification costing and programme analysis carried out in section 5.5 illustrates the variability between the certification bodies studied.
There are several selection criteria which should be considered when selecting the most suitable body, and from this study these can be concluded as: costs (including expenses); payment methods; knowledge of the industry; certification programme; cooperation of assessors; recognition of the body in the industry sector, and publicity generated from certification.

6.3.5 Quality Costing

The estimated prevention, appraisal and external quality costs calculated from the analysis discussed in section 5.6 exceed £317,000. It is clear from the analysis that more costs exist which are less identifiable, and this is particularly the case with failure costs.

This exercise indicates that quality costs can account for a significant proportion of the total sales turnover of a contracting organization of the size studied. Where a quality system has been introduced on the scale of the system introduced into the this organization the 'running' costs represent approximately two percent of turnover (based on this estimate), and on this basis the costs should be supported through monitoring the gain of improvements in failure costs. Only through evidence of this benefit will many directors consider the initial investment required to develop a quality system to be of value.

6.3.6 Summary

The effective implementation and operation of a quality system within a contracting organization of the type studied is dependent upon the following factors:-

(i) The Chief Executive (eg. the Chairman or Managing Director) must support the implementation of the quality system in order for it to be a success.

(ii) Ideally the change agent (eg. the Quality System Manager or the author in this case) should have a degree of individual authority to assist in the introduction of the change.

(iii) Control the introduction of the quality system through a formal approach such as a management team (eg. a management committee).

(iv) Train all staff thoroughly in the introduction and operation of the quality system, at the early stages of the work.

(v) Introduce and maintain an internal auditing programme as the basis for long term control of the quality system.

(vi) Develop the Procedures Manual around the functional departments of the organization.

(vii) Ensure that the procedures reflect actual, as opposed to desired, practice.
(viii) Only change procedures in liaison with relevant staff in order to gain cooperation, and to ensure that new procedures are understood and implemented.

(ix) Procedures must not only reflect the functional elements within the organization, but must also incorporate the needs of BS 5750 (or the relevant Standard).

(x) Apply the Quality Plan to all contracts, however an abbreviated plan may be used on smaller value contracts.

(xi) Reference the Procedures Manual from the Quality Plan. The elements within the quality system should be linked and cross-referenced to make the system as clear as possible to all users.

(xii) Use second party auditing where possible to ensure that the supplier will provide the required level of quality.

(xiii) Use a supplier and subcontractor evaluation system as an active method of monitoring performance. Inform the suppliers and subcontractors of significant performance variations in order to improve quality.

(xiv) Specify the requirements from suppliers and subcontractors in equal detail where possible.

(xv) Evaluate the proposals from third party certification bodies in detail before acceptance.

(xvi) Implement a quality costing system as a mechanism for measuring improvements in achieving quality within the organization. Set up the system as soon as possible, before the improvements in quality have significant effect.

The overall themes arising from this conclusion summary are as follows:-

. MANAGE THE INTRODUCTION OF THE SYSTEM FROM THE 'TOP' OF THE ORGANIZATION.
. TRAIN ALL STAFF IN THE INTRODUCTION AND OPERATION OF THE SYSTEM.
. BASE THE PROCEDURES UPON FUNCTIONAL AREAS.
. MONITOR THE SYSTEM VIA INTERNAL AUDITING.
. INVOLVE STAFF IN PROCEDURAL CHANGE - DO NOT DictATE THE CHANGE.
. INVOLVE SUPPLIERS AND SUBCONTRACTORS IN IMPROVING PERFORMANCE AND QUALITY.
. SELECT THE CERTIFICATION BODY WITH CARE.
. MEASURE 'QUALITY PERFORMANCE' VIA A QUALITY COSTING SYSTEM.
. DEVELOP THE SYSTEM AS REQUIRED.
6.4 RECOMMENDATIONS FOR FURTHER STUDY

Based on the research into the HRM system, the logical next phase of research would be a full introduction and validation of the suggested model. This study would be conducted on the same basis as the quality system research and validation.

As discussed in this thesis, the research and development of a quality costing system is a major element in the management of quality in an organization as it provides a measure on the performance of the system. Consequently this is an excellent potential area for further study, and would provide valuable information, as the author found little applicable information on this subject.

A detailed industry survey on the state of HRM and quality management would also provide a basis for further research, and would enable the generation of further management system models for a variety of organizational structures.
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